5. SURGERY

Trans-sacral epiduroscopic

J Orthop Surg Res. 2017 Dec 4;12(1):187. doi: 10.1186/s13018-017-0691-z.

Complications of lumbar disc herniations following trans-sacral epiduroscopic lumbar decompression: a single-center, retrospective study.

Kim SK[1,2], Lee SC[3], Park SW[4], Kim ES[5].
Author information

Abstract
BACKGROUND:
Trans-sacral epiduroscopic lumbar decompression (SELD) is an emerging procedure for the treatment of lumbar disc herniation (LDH), with favorable outcomes having been reported. However, the complications associated with SELD have not been comprehensively evaluated to date. Therefore, the aim of our study was to describe the incidence rate, types, and characteristics of complications following SELD and management outcomes.
METHODS:
Retrospective analysis of the surgical and clinical outcomes for 127 patients (average age, 42.2 ± 15.2 years) who underwent SELD for LDH at L2-3, L3-4, L4-5, and/or L5-S1, performed by a single experienced spine surgeon at a single center, between January 2015 and April 2017, was conducted.
RESULTS:
All procedures were successful, with a mean follow-up of 12.3 ± 2.3 months. Complications were identified in 8 patients (6.3%), including 3 cases of incomplete decompression (2.4%), 2 cases of recurrent disc herniation (1.6%), and one case each of hematoma, dural tearing, and subchondral osteonecrosis (0.8%). Among these cases with complications, only 2 cases with incomplete decompression and one case with recurrent LDH did not improve with conservative treatment and required re-operation using an open approach. The rate of complications decreased from 12.6% when considering only the first 50 cases to 2.6% for cases 51-127.
CONCLUSIONS:
Incomplete decompression, recurrent herniation, epidural hematoma, dural tear, and subchondral osteonecrosis were identified as complications of SELD, although the overall rate of complications was low. Practice with the procedure and careful patient selection can lower the risk of complications.

8. VISCERA

Crohn's and skeletal growth

Horm Res Paediatr. 2017 Dec 6. doi: 10.1159/000485185.

Long-Term Skeletal Disproportion in Childhood-Onset Crohn's Disease.

Mason A[1], Gerasimidis K[2], Iljuhhina J[2], Laird S[3], Munro J[3], Gaya DR[3], Russell RK[4], Ahmed SF[1].
Author information

Abstract
BACKGROUND:
It is unclear whether Crohn's disease (CD) is associated with skeletal disproportion in adulthood.

METHODS:
Height (Ht), sitting height (SHt) and leg length were studied in 44 children (male: 22), 23 adults (male: 10) with childhood-onset (CO) CD and 26 adults (male: 9) with adult-onset (AO) CD with a median (range) age of 13.7 (10, 17.3), 21.5 (18, 32) and 31.0 (22, 40) years, respectively.

RESULTS:
Adults with CO-CD had a median Ht standard deviation score (SDS) of -0.9 (-2.3, 0.0) compared to 0.6 (-0.8, 1.0) in those with AO-CD ($p < 0.05$). Compared to a normal population, men, but not women, with CO-CD also had lower median SHt SDS at -1.1 (2.5, -0.5) ($p < 0.05$). The expected positive association that is normally found between leg length and SHt SDS was not evident in the adults with CO-CD.

CONCLUSION:
Short stature in adults with CO-CD is more pronounced in men and may be associated with poor spinal growth.

MD and CVD

Eur J Nutr. 2017 Nov 25. doi: 10.1007/s00394-017-1582-0.

Mediterranean diet and cardiovascular disease: a systematic review and meta-analysis of observational studies.

Rosato V[1], Temple NJ[2], La Vecchia C[1], Castellan G[3], Tavani A[4], Guercio V[5].
Author information

Abstract
PURPOSE:
To provide evidence of the relationship of Mediterranean diet (MD) on incidence/mortality for cardiovascular disease (CVD), coronary/ischemic heart disease (CHD)/acute myocardial infarction (AMI) and stroke (ischemic/hemorrhagic) by sex, geographic region, study design and type of MD score (MDS).
METHODS:
We performed a systematic review and meta-analysis of observational studies. Pooled relative risks (RRs) were calculated using random-effects models.
RESULTS:
We identified 29 articles. The RR for the highest versus the lowest category of the MDS was 0.81 (95% CI 0.74-0.88) for the 11 studies that considered unspecified CVD, consistent across all strata. The corresponding pooled RR for CHD/AMI risk was 0.70 (95% CI 0.62-0.80), based on 11 studies. The inverse relationship was consistent across strata of study design, end point (incidence and mortality), sex, geographic area, and the MDS used. The overall RR for the six studies that considered unspecified stroke was 0.73 (95% CI 0.59-0.91) for the highest versus the lowest category of the MDS. The corresponding values were 0.82 (95% CI 0.73-0.92) for ischemic (five studies) and 1.01 (95% CI 0.74-1.37) for hemorrhagic stroke (four studies).
CONCLUSIONS:
Our findings indicate and further quantify that MD exerts a protective effect on the risk of CVD. This inverse association includes CHD and ischemic stroke, but apparently not hemorrhagic stroke

13 A. CRANIUM

Trigeminal nerve operation

World Neurosurg. 2017 Dec 1. pii: S1878-8750(17)32079-X. doi: 10.1016/j.wneu.2017.11.147.

Microvascular decompression for treatment of trigeminal neuralgia: factors that predict complete pain relief and study of efficacy and safety in older patients.

Nunta-Aree S[1], Patiwech K[1], Sitthinamsuwan B[2].
Author information

Abstract
OBJECTIVE:
Microvascular decompression (MVD) is an effective method for directly treating the etiology of trigeminal neuralgia (TGN). This study aims to investigate the factors that predict complete pain relief after MVD for treatment of TGN, and to study efficacy and safety in older patients.
METHODS:
This study was conducted in patients with TGN that were treated by MVD at Siriraj Hospital during 2004-2015. Cases with secondary TGN were excluded. Data was gathered from medical records, preoperative magnetic resonance imaging (MRI), intraoperative findings, and by telephone in patients lost to follow-up.
RESULTS:
Of 110 included patients, 68 and 42 patients were younger and older than 60 years, respectively. Median age was 53.6 years old. Typical type of TGN, paroxysmal pain, large offending vessel on preoperative MRI, and multiple locations of trigeminal nerve compression were associated with early postoperative pain-free status. No variables were associated with long-term outcome. Multivariate analysis using binary logistic regression revealed typical type of TGN to be the only factor associated with early postoperative pain-free status. No significant difference was observed between the <60 and ≥60 age groups for surgical outcome and rate of complications.
CONCLUSIONS:
Presence of typical type TGN was the only factor found to independently predict a pain-free outcome in the early postoperative period. No factors were associated long-term pain-free outcome. MVD is an effective and safe operative procedure, and it should be regarded as a safe and viable alternative for treating intractable TGN in older patients.

14. HEADACHES

Post traumatic HA's PTSD

Headache. 2017 Nov 28. doi: 10.1111/head.13233.

The Role of Negative Affect on Headache-Related Disability Following Traumatic Physical Injury.

Pacella ML[1], Hruska B[1], George RL[2,3], Delahanty DL[1,4,5].
Author information

Abstract
OBJECTIVE:
Acute postinjury negative affect (NA) may contribute to headache pain following physical injury. Early psychiatric-headache comorbidity conveys increased vulnerability to chronic headache-related disability and impairment. Yet, it is unknown whether NA is involved in the transition to chronic headache related-disability after injury. This prospective observational study examined the role of acute postinjury NA on subacute and chronic headache-related disability above and beyond nonpsychiatric factors.
METHODS:
Eighty adult survivors of single-incident traumatic physical injury were assessed for negative affect (NA): a composite of depression and anxiety symptoms, and symptoms of posttraumatic stress disorder (PTSS) during the acute 2-week postinjury phase. NA was examined as the primary predictor of subacute (6-week) and chronic (3-month) headache-related disability; secondary analyses examined whether the individual NA components differentially impacted the outcomes.
RESULTS:
Hierarchical linear regression confirmed NA as a unique predictor of subacute (Cohen's $f^2 = 0.130$; $P = .005$) and chronic headache related-disability (Cohen's $f^2 = 0.160$; $P = .004$) beyond demographic and injury-related factors (sex, prior headaches, and closed head injury). Upon further analysis, PTSS uniquely predicted greater subacute (Cohen's $f^2 = 0.105$; $P = .012$) and chronic headache-related disability (Cohen's $f^2 = 0.103$; $P = .022$) above and beyond demographic and injury-related factors, depression, and anxiety. Avoidance was a robust predictor of subacute headache impairment (explaining 15% of the variance) and hyperarousal was a robust predictor of chronic headache impairment (10% of the variance).
CONCLUSION:
Although NA consistently predicted headache-related disability, PTSS alone was a unique predictor above and beyond nonpsychiatric factors, depression, and anxiety. These results are suggestive that early treatment of acute postinjury PTSS may correlate with reductions in disability and negative physical health sequelae associated with PTSS and chronic headache.

16. CONCUSSIONS

Activity testing

SYSTEMATIC REVIEW

GAIT DEFICITS UNDER DUAL – TASK CONDITIONS IN THE CONCUSSED ADOLESCENT AND YOUNG ATHLETE POPULATION: A SYSTEMATIC REVIEW

Larisa Grants, SPT[1] Bailey Powell, SPT[1] Cody Gessel, SPT[1] Faith Hiser, SPT[1]
Amy Hassen, PT, DPT, OCS, MTC[1]
IJSPT vol 12, issue 7
ABSTRACT
Background: There are no current sport concussion assessments that capture the effects of dual-task conditions on gait. Multiple studies have evaluated changes, but none have comprehensively examined literature related to the adolescent and young adult population.

Purpose: The purpose of this systematic review is to synthesize documented changes in gait under dual-task conditions in adolescents and young adults after sustaining a concussion.
Study Design: Systematic Review

Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses(PRISMA)was consulted to guide this systematic review. Six databases were searched: Cinahl, ProQuest, PubMed, Scopus, SPORTdiscus, and Web of Science. Concussion, gait, and dual-task, along with their synonymous terms were the search terms used. Inclusion criteria consisted of adolescent and young adult age groups, acute concussion, dual-tasking, and matched controls. Quality assessment was performed using The Joanna Briggs Insti- tute Critical Appraisal Checklist for Case Control Studies.

Results: Ten full-text articles were selected for inclusion. Concussed individuals demonstrated longer stride times with shorter stride lengths, increased mediolateral displacement with corresponding increases in sagittal and frontal plane peak velocity, and decreased sagittal plane Center of Mass (COM) and Center of Pressure (COP) displacement. The majority of included studies demonstrated moderate to large effect sizes in these gait characteristics.

Conclusion: Concussed individuals demonstrated decreased gait stability while ambulating with a dual-task condition. Though statistically significant differences between concussed individuals and matched controls lasted only 72 hours, concussed individuals demonstrated continued improvements in gait for up to two months post-injury, which has the potential to affect an athlete's ability to perform. Further research is needed to determine if a gait examination with a dual-task condition is a realistic, reliable, and valid measure to be included in return to sport testing.

20 A. ROTATOR CUFF

Cuff ex

RESEARCH REPORT

A Systematic Review of Electromyography Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair

Authors: Peter K. Edwards, MSc[1], Jay R. Ebert, PhD[1], Chris Littlewood, PhD[2], Tim Ackland, PhD[1], Allan Wang, FRACS, PhD[3,4]

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**47 **Issue:**12 **Pages:**931–944 **DOI:** 10.2519/jospt.2017.7271

Abstract
Top of Form
Bottom of Form
Study Design
Systematic review.
Background
Electromyography (EMG) has previously been used to guide postoperative rehabilitation progression following rotator cuff repair to prevent deleterious loading of early surgical repair.
Objective
To review the current literature investigating EMG during rehabilitation exercises in normal shoulders, and to identify exercises that meet a cut point of 15% maximal voluntary isometric contraction (MVIC) or less and are unlikely to result in excessive loading in the early postoperative stages.
Methods
An electronic search of MEDLINE via Ovid, Embase, CINAHL, SPORT Discus, PubMed, and the Cochrane Library for all years up to June 2016 was performed. Studies were selected in relation to predefined selection criteria. Pooled mean MVICs were reported and classified as low (0%–15% MVIC), low to moderate (16%–20% MVIC), moderate (21%–40% MVIC), high (41%–60% MVIC), and very high (greater than 60% MVIC).
Results
A search identified 2159 studies. After applying the selection criteria, 20 studies were included for quality assessment, data extraction, and data synthesis. In total, 43 exercises spanning passive range of motion, active-assisted range of motion, and strengthening exercises were evaluated. Out of 13 active-assisted exercises, 9 were identified as suitable (15% MVIC or less) to load the supraspinatus and 10 as suitable to load the infraspinatus early after surgery. All exercises were placed in a theoretical-continuum model, by which general recommendations could be made for prescription in patients post rotator cuff repair.
Conclusion
This review identified passive and active-assisted exercises that may be appropriate in the early stages after rotator cuff repair. *J Orthop Sports Phys Ther 2017;47(12):931–944. Epub 13 Jul 2017. doi:10.2519/jospt.2017.7271*

22 A. IMPINGMENT

Postural impacts

ORIGINAL RESEARCH

POSTURAL ALTERATIONS IN PATIENTS WITH SUBACROMIAL IMPINGEMENT SYNDROME

Omid Alizadehkhaiyat[1] Margaret M. Roebuck[2] Ahmed T. Makki[2] Simon P. Frostick[2] *IJSPT vol 12, issue 7*

ABSTRACT
Background: An aberrant upper body posture has been proposed as one of the etiological factors contributing to the development of subacromial impingement syndrome (SAIS). Clinicians have translated this supposition into assessment and rehabilitation programs despite insufficient and conflicting evidence to support this approach.
Purpose: The purpose of this study was to compare several postural variables between the SAIS patients and asymptomatic healthy controls.
Study Design: Case-Control Study
Methods: A total of 75 participants including 39 patients (20 females; 19 males) and 36 healthy controls (15 females; 21 males) participated in the study. Study evaluated several postural variables including forward head posture (FHP), forward shoulder posture (FSP), thoracic kyphosis index (TKI), scapular index (SI), normalized scapular protraction (NSP), and the lateral scapular slide test (LSST). The variables were compared between patient and control groups according to sex.
Results: Significant differences were observed in the female patients compared to asymptomatic controls for the FHP (49.3 +9.6o vs 55.5o+8.3 , p=0.03), FSP (45.5 +10.1o vs 53.6 +7.0 , p=0.02), and LSST in third position (10.2+2.1cm vs 11.5+0.7cm, p=0.01). Male patients showed a significant difference only in the FSP compared to controls (61.9o+9.4o vs 49.7 +9.2 , p<0.001).
Conclusions: While inadequate data on the relationship between dysfunctional posture and SAIS has led to broad variations in current rehabilitation strategies, the results of the present study revealed different patterns of postural aberrations in female and male patients with SAIS. This clarifies the need to develop individualized or sex-specific approaches for assessing posture in men and women with SAIS and rehabilitation programs based on the assessment results.
Level of Evidence: 3b *Key words:* Forward head posture, forward shoulder posture, movement system, postural assessment, scapular posi- tioning, shoulder impingement, thoracic kyphosis

27. HIP

Hip pain and glut volume

RESEARCH REPORT

Hip Abductor Muscle Volume and Strength Differences Between Women With Chronic Hip Joint Pain and Asymptomatic Controls

Authors: Matthew J. Mastenbrook, DPT[1], Paul K. Commean, BEE[2], Travis J. Hillen, MD[3], Gretchen B. Salsich, PT, PhD[4], Gretchen A. Meyer, PhD[1,5], Michael J. Mueller, PT, PhD, FAPTA[1,3], John C. Clohisy, MD[6], Marcie Harris-Hayes, DPT, MSCI[1,6]
Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**47 **Issue:**12 **Pages:**923–930 **DOI:** 10.2519/jospt.2017.7380

Abstract

Choose sectionChoose sectionTop of pageAbstract <<MethodsResultsDiscussionConclusionKey PointsAcknowledgmentsReferences

Study Design

Secondary analysis, cross-sectional study.

Background

Chronic hip joint pain (CHJP) can lead to limitations in activity participation, but the musculoskeletal factors associated with the condition are relatively unknown. Understanding the factors associated with CHJP may help develop rehabilitation strategies to improve quality of life of individuals with long-term hip pain.

Objectives

To compare measures of hip abductor muscle volume and hip abductor muscle strength between women with CHJP and asymptomatic controls.

Methods

Thirty women, 15 with CHJP and 15 matched asymptomatic controls (age range, 18–40 years), participated in this study. Magnetic resonance imaging was used to determine the volume of the primary hip abductor muscles, consisting of the gluteus medius, gluteus minimus, a small portion of the gluteus maximus, and the tensor fascia latae, within a defined region of interest. Break tests were performed using a handheld dynamometer to assess hip abductor strength. During the strength test, the participant was positioned in sidelying with the involved hip in 15° of abduction. Independent-samples *t* tests were used to compare muscle volume and strength values between those with CHJP and asymptomatic controls.

Results

Compared to asymptomatic controls, women with CHJP demonstrated significantly increased gluteal muscle volume (228 ± 40 cm^3 versus 199 ± 29 cm^3, $P = .032$), but decreased hip abductor strength (74.6 ± 16.8 Nm versus 93.6 ± 20.2 Nm, $P = .009$). There were no significant differences in tensor fascia lata muscle volume between the 2 groups ($P = .640$).

Conclusion

Women with CHJP appear to have larger gluteal muscle volume, but decreased hip abductor strength, compared to asymptomatic controls. *J Orthop Sports Phys Ther 2017;47(12):923–930. Epub 9 Oct 2017. doi:10.2519/jospt.2017.738*

32 A. KNEE/ACL

Cartilage damage/synovial biomarkers

Arthritis Res Ther. 2017 Dec 6;19(1):265. doi: 10.1186/s13075-017-1471-1.

Prediction of progression of damage to articular cartilage 2 years after anterior cruciate ligament reconstruction: use of aggrecan and type II collagen biomarkers in a retrospective observational study.

Sobue Y[1], Kojima T[2], Kurokouchi K[3], Takahashi S[3], Yoshida H[4], Poole R[5], Ishiguro N[1].
Author information

Abstract
BACKGROUND:
We aimed to determine whether synovial fluid (SF) biomarkers can predict the progression of articular cartilage damage as determined by arthroscopic evaluation during and after anterior cruciate ligament (ACL) reconstruction.

METHODS:
Arthroscopic assessment of articular cartilage damage was performed twice in 62 patients, first during ACL reconstruction and then approximately 2 years later during implant removal for ligament fixation. SF levels of the collagenase-generated cleavage neoepitope of type II collagen (C2C) and proteoglycan glycosaminoglycans keratan sulfate (KS), chondroitin-4-sulfate (Δdi-C4S), and chondroitin-6-sulfate (Δdi-C6S) were measured at ACL reconstruction. Associations between baseline biomarker levels and subsequent progression of cartilage damage were determined using receiver operating characteristic analysis and multivariable logistic regression analysis.

RESULTS: No radiographic changes were observed in any of the patients. Progression of high-grade cartilage damage, observed arthroscopically, was negatively correlated with levels of Δdi-C6S and KS, as well as the ratio of Δdi-C6S to Δdi-C4S (C6S/C4S). Logistic regression analysis revealed significant associations of Δdi-C6S (cut-off: 55.7 nmol/ml, odds ratio (OR) 0.231, 95% confidence interval (CI) 0.061-0.879), KS (cut-off: 10.6 μg/ml, OR 0.114, 95% CI 0.024-0.529), and C6S/C4S ratio (cut-off: 4.6, OR 0.060, 95% CI 0.005-0.737) with the progression of high-grade cartilage damage after adjusting for age, the duration from injury to first surgery, sex, and the number of high-grade lesions (grades III and IV) at baseline.
CONCLUSIONS: The progression of high-grade cartilage damage was significantly associated with baseline levels of proteoglycan glycosaminoglycan biomarkers; namely, Δdi-C6S, KS, and C6S/C4S ratio.

33. MENISCUS

Extensor torque

RESEARCH REPORT

Knee Extensor Rate of Torque Development Before and After Arthroscopic Partial Meniscectomy, With Analysis of Neuromuscular Mechanisms

Authors: Daniel G. Cobian, DPT, PhD, CSCS[1], Cameron M. Koch, BS[2], Annunziato Amendola, MD[3], Glenn N. Williams, PT, PhD, ATC[4]

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**47 **Issue:**12 **Pages:**945–956 **DOI:** 10.2519/jospt.2017.7310

Abstract

Study Design

Descriptive, prospective single-cohort longitudinal study.

Background

Though rapid torque development is essential in activities of daily living and sports, it hasn't been specifically tested by most physical therapists or incorporated into rehabilitation programs until late in the treatment process. Little evidence is available on quadriceps torque development capacity before and after arthroscopic knee surgery.

Objectives

To study knee extensor rate of torque development, contributing mechanisms, and associations with strength and patient-reported outcomes before and during the first 6 weeks after arthroscopic partial meniscectomy.

Methods

Twenty subjects (mean ± SD age, 42.3 ± 13.7 years; body mass index, 26.6 ± 3.1 kg/m^2) were tested before surgery, and at 2 and 5 weeks after surgery. Quadriceps muscle volume, strength, activation, rate of torque development, and patient-reported outcomes were evaluated across the study period.

Results

Significant side-to-side differences in quadriceps strength and voluntary rate of torque development were observed at each time point (P<.05). Changes in muscle activity were associated with changes in rapid torque development capacity. Side-to-side rate of torque development deficits after surgery were associated with lower patient-reported outcomes scores.

Conclusion

Diminished rapid torque development capacity is common in arthroscopic meniscal debridement patients. This reduced capacity is associated with an inability to quickly recruit and drive the quadriceps muscles (neural mechanisms) and not muscle atrophy or other peripheral factors tested. Patient-reported outcomes are associated with quadriceps rate of torque development, but not strength or muscle size. Rapid torque development warrants greater attention in rehabilitation. *J Orthop Sports Phys Ther 2017;47(12):945–956. Epub 9 Oct 2017. doi:10.2519/jospt.2017.7310*

35. KNEE/TOTAL

Poverty and total knee

Arthritis Care Res (Hoboken). 2017 Nov 22. doi: 10.1002/acr.23442.

Education mitigates the effect of poverty on total knee arthroplasty outcomes.

Goodman SM[1], Mandl LA[2], Mehta B[2], Navarro-Millan I[2], Russell LA[1], Parks ML[2], Dey SA[2], Crego D[2], Figgie MP[3], Nguyen JT[4], Szymonifka J[5], Zhang M[2], Bass AR[1].
Author information

Abstract
OBJECTIVE:
TKA outcomes are worse for patients from poor neighborhoods, but whether education mitigates the effect of poverty is not known. We assessed the interaction between education and poverty on 2-year WOMAC pain and function.
METHODS:
Patient level variables from an institutional registry were linked to US Census Bureau data (census tract (CT) level). Statistical models including patient and CT level variables were constructed within multilevel frameworks. Linear mixed effect models with separate random intercepts for each CT were used to assess the interaction between education and poverty at the individual and community level on WOMAC scores.
RESULTS:
Of 3970 TKA patients, 2438 (61%) had some college or more. Having no college was associated with worse pain and function at baseline and 2 years ($p = 0.0001$). Living in a poor neighborhood (>20% below poverty) was associated with worse 2-year pain ($p = 0.02$) and function ($p = 0.006$). There was a strong interaction between individual education and community poverty with WOMAC scores at two years. Patients without college living in poor communities had pain scores that were ~10 points worse than those with some college (83.4% vs. 75.7%, $p < 0.0001$); in wealthy communities, college was associated with 1 point difference in pain. Function was similar.
CONCLUSION:
In poor communities, those without college attain 2-year WOMAC scores that are 10 points worse than those with some college; education has no impact on TKA outcomes in wealthy communities. How education protects those in impoverished communities warrants further study.

Manipulation to improve RoM

Efficacy of Manipulation Under Anesthesia for Stiffness Following Total Knee Arthroplasty: A Systematic Review

Alex Gu Adam J. Michalak[1] Jordan S. Cohen Neil D. Almeida Alexander S. McLawhorn Peter K. Sculco

DOI: http://dx.doi.org/10.1016/j.arth.2017.11.054

Background

Knee stiffness following primary total knee arthroplasty can lead to unsatisfactory patient outcomes secondary to persistent pain and loss of function. Manipulation under anesthesia (MUA) remains a viable option for treatment of post-operative stiffness. However, the optimal timing and clinical efficacy of manipulation of anesthesia remains unknown.

Methods

A systematic review of the literature was performed to identify studies that reported clinical outcomes for patients who underwent MUA for post-operative stiffness treatment. Repeat MUA procedures were included in the study but were analyzed separately.

Results

22 studies (1488 patients) reported on range of motion (ROM) after MUA, and 4 studies (81 patients) reported ROM after repeat MUA. All studies reported pre-MUA motion of less than 90 degrees, while mean ROM at last follow up exceeded 90 degrees in all studies except two. For studies reporting range of motion improvement following repeat MUA, the mean pre-manipulation ROM was 80 degrees and the mean post-manipulation ROM was 100.6 degrees.

Conclusions

MUA remains an efficacious, minimally invasive treatment option for post-operative stiffness following TKA. MUA provides clinically significant improvement in ROM for most patients, with the best outcomes occurring in patients treated within 12 weeks post-operatively.

Factors for

BMC Musculoskelet Disord. 2017 Dec 4;18(1):510. doi: 10.1186/s12891-017-1871-z.

Risk factors for joint replacement in knee osteoarthritis; a 15-year follow-up study.

Nielsen FK[1], Egund N[2], Jørgensen A[3], Jurik AG[2].
Author information

Abstract
BACKGROUND:
To evaluate whether clinical, radiographic or MRI findings are associated with long term risk for total knee arthroplasty (TKA) in persons with knee osteoarthritis.

METHODS:
We performed a follow-up analysis of 100 persons with knee osteoarthritis who participated in a clinical trial between 2000 and 2002. Clinical data as well as radiography and MRI of the inclusion knee were obtained in all participants. Data on TKA procedures were extracted from The Danish National Patient Register. Clinical, radiographic and MRI findings were analyzed for associations with subsequent TKA.

RESULTS:
During a mean follow-up period of 15 years, 66% received a TKA in the included knee (target knee); 37% also received a TKA in the other knee. The degree of joint space narrowing was highly associated with subsequent TKA (adjusted odds ratio (OR) 5.0 (95% confidence interval (95% CI) 2.6 - 9.9)) as was a radiological sum score comprising joint space narrowing, osteophytes, subchondral sclerosis and cysts (adjusted OR 1.7 (95% CI 1.3 - 2.1)). MRI detected bone marrow lesions, synovitis and effusion were similarly associated with subsequent TKA with an adjusted OR of 2.3 (95% CI 1.3 - 4.0), 2.8 (95% CI 1.5 - 5.2) and 1.9 (95% CI 1.2 - 3.1), respectively. Increased body mass index (BMI) was not associated with subsequent TKA in the target knee but was associated with TKA in the other knee (OR 2.3 (95% CI 1.2 - 4.3).

CONCLUSIONS:
Radiographic findings including joint space narrowing and MRI detected bone marrow lesions, synovitis and effusion were all significantly associated with the long term risk of TKA in persons with knee osteoarthritis.

37. OSTEOARTHRITIS/KNEE

PRP helps

Int J Rheum Dis. 2017 Dec 5. doi: 10.1111/1756-185X.13233.

Intra-articular platelet-rich plasma injections for knee osteoarthritis: An overview of systematic reviews and risk of bias considerations.

Xing D[1,2], Wang B[3], Zhang W[1,2], Yang Z[1,2], Hou Y[1,2], Chen Y[4,5], Lin J[1,2].
Author information

Abstract
OBJECTIVES:
Numerous systematic reviews investigating the efficacy of platelet-rich plasma (PRP) in treating knee osteoarthritis (OA) have been recently published. The purpose of the present study was (1) to perform an overview of overlapping systematic reviews investigating PRP for knee OA via evaluating methodological quality and risk of bias of systematic reviews and (2) to provide recommendations through the best evidence.
METHODS:
A systematic search of systematic reviews published through Feb 2017 was conducted using the MEDLINE, EMBASE and Cochrane Library. The methodological quality and risk of bias of included systematic reviews were assessed by AMSTAR instrument and ROBIS tool respectively. Best evidence choice procedure was conducted according to the Jadad decision algorithm. The systematic reviews with high quality of methodology and low risk of bias were selected ultimately.
RESULTS:
Ten systematic reviews were eligible for inclusion. The Jadad decision making tool suggested that the reviews with highest AMSTAR score should be selected. According to the ROBIS tool, there were 4 systematic reviews with low risk of bias and 6 with high risk of bias. As a result, two systematic reviews conducted by Dai et al and Meheux et al with highest AMSTAR score and low risk of bias were selected as the best evidence.
CONCLUSIONS:
The present overview demonstrates that PRP is an effective intervention in treating knee OA without increased risk of adverse events. Therefore, the present conclusions may help decision makers interpret and choose PRP with more confidence.

38 B. FOOT TYPES

Foot morphology

ORIGINAL RESEARCH RELIABILITY OF ANKLE-FOOT MORPHOLOGY, MOBILITY, STRENGTH, AND MOTOR PERFORMANCE MEASURES

John J. Fraser, PT, PhD, OCS[1] Rachel M. Koldenhoven, MEd, ATC[1] Susan A. Saliba, PT, PhD, ATC[1] Jay Hertel, PhD, ATC[1]
IJSPT vol 12, issue 7

ABSTRACT
Background: Assessment of foot posture, morphology, intersegmental mobility, strength and motor control of the ankle-foot complex are commonly used clinically, but measurement properties of many assessments are unclear.
Purpose: To determine test-retest and inter-rater reliability, standard error of measurement, and minimal detectable change of morphology, joint excursion and play, strength, and motor control of the ankle-foot complex.
Design: Reliability study.
Methods: 24 healthy, recreationally-active young adults without history of ankle-foot injury were assessed by two clinicians on two occasions, three to ten days apart. Measurement properties were assessed for foot morphology (foot posture index, total and truncated length, width, arch height), joint excursion (weight-bearing dorsiflexion, rearfoot and hallux goniometry, forefoot incli- nometry, 1st metatarsal displacement) and joint play, strength (handheld dynamometry), and motor control rating during intrinsic foot muscle (IFM) exercises. Clinician order was randomized using a Latin Square. The clinicians performed independent examina- tions and did not confer on the findings for the duration of the study. Test-retest and inter-tester reliability and agreement
was assessed using intraclass correlation coefficients (ICC) and weighted kappa (*K*).
Results: Test-retest reliability ICC were as follows: morphology: .80-1.00, joint excursion: .58-.97, joint play: -.67-.84, strength: .67- .92, IFM motor rating: *K*-.01-.71. Inter-rater reliability ICC were as follows: morphology
.81-1.00, joint excursion: .32-.97, joint play: -1.06-1.00, strength: .53-.90, and IFM motor rating: *K*.02-.56.
Conclusion: Measures of ankle-foot posture, morphology, joint excursion, and strength demonstrated fair to excellent test-retest and inter-rater reliability. Test-retest reliability for rating of perceived difficulty and motor performance was good to excellent for short-foot, toe-spread-out, and hallux exercises and poor to fair for lesser toe extension. Joint play measures had poor to fair reli- ability overall. The findings of this study should be considered when choosing methods of clinical assessment and outcome mea- sures in practice and research.
Level of evidence: 3 *Key Words:* Assessment, examination, intrinsic foot muscles, manual therapy, repeatability

40. ANKLE SPRAINS AND INSTABILITY

Proprioception

Influence of Passive Joint Stiffness on Proprioceptive Acuity in Individuals With Functional Instability of the Ankle

Authors: Hellen Veloso Rocha Marinho, PT, PhD[1,2], Giovanna Mendes Amaral, PT, PhD[2,3], Bruno de Souza Moreira, PT, PhD[2], Vanessa Lara Araújo, PT, PhD[2], Thales Rezende Souza, PT, PhD[2,4], Juliana Melo Ocarino, PT, PhD[2,4], Sérgio Teixeira da Fonseca, PT, ScD[2,4]
Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**47 **Issue:**12 **Pages:**899–905 **DOI:** 10.2519/jospt.2017.7030

Study Design
Controlled laboratory study, cross-sectional.
Background
Deficits in ankle proprioceptive acuity have been reported in persons with functional instability of the ankle. Passive stiffness has been proposed as a possible mechanism underlying proprioceptive acuity.
Objective
To compare proprioceptive acuity and passive ankle stiffness in persons with and without functional ankle instability, and to assess the influence of passive joint stiffness on proprioceptive acuity in persons with functional ankle instability.
Methods
A sample of 18 subjects with and 18 without complaints of functional ankle instability following lateral ankle sprain participated. An isokinetic dynamometer was used to compare motion perception threshold, passive position sense, and passive ankle stiffness between groups. To evaluate the influence of passive stiffness on proprioceptive acuity, individuals in the lateral functional ankle instability group were divided into 2 subgroups: “high” and “low” passive ankle stiffness.
Results
The functional ankle instability group exhibited increased motion perception threshold when compared with the corresponding limb of the control group. Between-group differences were not found for passive position sense and passive ankle stiffness. Those in the functional ankle instability group with higher passive ankle stiffness had smaller motion perception thresholds than those with lower passive ankle stiffness.
Conclusion
Unlike motion perception threshold, passive position sense is not affected by the presence of functional ankle instability. Passive ankle stiffness appears to influence proprioceptive acuity in persons with functional ankle instability. *J Orthop Sports Phys Ther 2017;47(12):899–905. Epub 7 Oct 2017. doi:10.2519/jospt.2017.7030*

43. HALLUX VALGUS

In Gout

Eur J Clin Invest. 2017 Nov 24. doi: 10.1111/eci.12862.

Tophus size is associated with hallux valgus deformity in gout.

Blandin C[1,2], Forien M[1,2], Gardette A[1,2], Palazzo E[1,2], Dieudé P[1,2], Ottaviani S[1,2].
Author information

Abstract
OBJECTIVE:
Hallux valgus (HV) and gout are common pathologies of the first metatarsophalangeal joint (MTP1) leading to pain and deformation. In this study, we aimed to determine the correlation between tophus size and characteristics of HV in gouty patients.
METHODS:
In this case-control study, we included patients with gout (presence of monosodium urate crystals in synovial fluid) and control patients with spondyloarthritis, without crystal disease disorders. Radiographic and ultrasound (US) assessment were performed by two blinded operators. US features of gout (double contour [DC] sign and/or tophus) were collected. HV was defined by hallux abductus (HA) angle ≥ 20° and/or intermetatarsal angle (IM) ≥ 10°. Correlation of US findings and HV angles was estimated by Spearman correlation coefficient.
RESULTS:
We included 56 gouty patients (87.5% males, mean age 63.9 ± 12.2 years) and 41 control patients (90% males, mean age 59.0 ± 12.8 years). HV was more frequent in patients with gout than controls (62% versus 37%, p = 0.0007). Regardless of HV status, correlations were found between the size of US tophi and IM (r=0.3381, p=0.003) and HA angles (r=0.2344, p=0.043).
CONCLUSIONS:
Our results confirm a high prevalence of HV in gouty patients. We also observed a correlation between the size of the US tophus and the angles defining HV, which suggests a link between urate deposition load and HV. Early urate-lowering therapy for gout could limit the occurrence of HV.

44. RHUMATOID ARTHRITIS

Parasympathetic regulation

Evidence of reduced parasympathetic autonomic regulation in inflammatory joint disease: A meta-analyses study

Seminars in Arthritis and Rheumatism | December 05, 2017
Provan SA, et al.

Researchers performed this meta-analyses study, wherein, heart rate variability (HRV), as a measure of parasympathetic cardiac autonomic dysfunction (AD), was assessed and compared between patients with inflammatory joint disorders (IJD) and healthy controls. Additionally, they assessed the effect of inflammation, physical inactivity and pain on HRV in IJD. Findings demonstrated that cardiac parasympathetic AD was present in patients with IJD and was associated with inflammation.

46 B. LOWER LIMB NEUROMOILIZATION

Nerve entrapment

IJSPT vol 12, issue 7 **CLINICAL COMMENTARY**

NERVE ENTRAPMENT IN THE HIP REGION: CURRENT CONCEPTS REVIEW

RobRoy Martin, PhD, PT, CSCS[1,2] Hal David Martin, DO[3] Benjamin R. Kivlan PhD, PT, OCS, SCS, CSCS[1]

ABSTRACT
The purpose of this clinical commentary is to review the anatomy, etiology, evaluation, and treatment techniques for nerve entrapments of the hip region.

Nerve entrapment can occur around musculotendinous, osseous, and ligamentous structures because of the potential for increased strain and compression on the peripheral nerve at those sites. The sequela of localized trauma may also result in nerve entrapment if normal nerve gliding is prevented. Nerve entrapment can be difficult to diagnose because patient complaints may be similar to and coexist with other musculoskeletal conditions in the hip and pelvic region.

However, a detailed description of symptom location and findings from a comprehensive physical examination can be used to determine if an entrapment has occurred, and if so where. The sciatic, pudendal, obturator, femoral, and lateral femoral cutaneous are nerves that can be entrapped and serve a source of hip pain in the athletic population. Manual therapy, stretching and strengthening exercises, aerobic condi- tioning, and cognitive-behavioral education are potential interventions. When conservative treatment is ineffective at relieving symptoms surgical treatment with neurolysis or neurectomy may be considered.
Level of Evidence: 5 ***Key words:*** Anatomy, etiology, evaluation, hip, nerve entrapment, treatment

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE

Acupuncture helps chronic pain

Acupuncture for Chronic Pain: Update of an Individual Patient Data Meta-Analysis

Andrew J. Vickers, PhD Emily A. Vertosick, MPH George Lewith, MD

DOI: http://dx.doi.org/10.1016/j.jpain.2017.11.005
Highlights
- Acupuncture has a clinically relevant effect on chronic pain that persists over time
- The effect of acupuncture cannot be explained only by placebo effects
- Factors in addition to the specific effects of needling are important contributors
- Referral for acupuncture treatment is a reasonable option for chronic pain patients

Abstract
Despite wide use in clinical practice, acupuncture remains a controversial treatment for chronic pain. Our objective was to update an individual patient data meta-analysis to determine the effect size of acupuncture for four chronic pain conditions.We searched MEDLINE and the Cochrane Central Registry of Controlled Trials randomized trials published up until December 31, 2015. We included randomized trials of acupuncture needling versus either sham acupuncture or no acupuncture control for non-specific musculoskeletal pain, osteoarthritis, chronic headache, or shoulder pain. Trials were only included if allocation concealment was unambiguously determined to be adequate. Raw data were obtained from study authors and entered into an individual patient data meta-analysis**.** The main outcome measures were pain and function. An additional 13 trials were identified, with data received for a total of 20,827 patients from 39 trials. Acupuncture was superior to both sham and no acupuncture control for each pain condition (all $p<0.001$) with differences between groups close to 0.5 standard deviations (SD) for comparison with no acupuncture control and close to 0.2 SDs in comparison with sham. We also found clear evidence that the effects of acupuncture persist over time with only a small decrease, approximately 15%, in treatment effect at one year. In secondary analyses, we found no obvious association between trial outcome and characteristics of acupuncture treatment, but effect sizes of acupuncture were associated with the type of control group, with smaller effects sizes for sham controlled trials that used a penetrating needle for sham, and for trials that had high intensity of intervention in the control arm.

We conclude that acupuncture is effective for the treatment of chronic pain, with treatment effects persisting over time. While factors in addition to the specific effects of needling at correct acupuncture point locations are important contributors to the treatment effect, decreases in pain following acupuncture cannot be explained solely in terms of placebo effects. Variations in the effect size of acupuncture in different trials are driven predominately by differences in treatments received by the control group rather than by differences in the characteristics of acupuncture treatment.
Perspective
Acupuncture is effective for the treatment of chronic musculosketal, headache and osteoarthritis pain. Treatment effects of acupuncture persist over time and cannot be explained solely in terms of placebo effects. Referral for a course of acupuncture treatment is a reasonable option for a patient with chronic pain.

49. STRETCHING

Short rotators
ORIGINAL RESEARCH

LENGTH CHANGE OF THE SHORT EXTERNAL ROTATORS OF THE HIP IN COMMON STRETCH POSITIONS: A CADAVERIC STUDY

Ryan P. McGovern, MS, LAT, ATC[1] Benjamin R. Kivlan, PhD, PT, SCS, OCS, CSCS[1]RobRoy L. Martin, PhD, PT, CSCS[1,2]
IJSPT vol 12, issue 7
ABSTRACT
Background: Stretching of the deep rotators of the hip is commonly employed in patients with lumbosacral, sacroiliac, posterior hip, and buttock pain. There is limited research demonstrating the effectiveness of common stretching techniques on the short external rotators of the hip.
Purpose: The objective of this study was to evaluate length change during stretching of the superior and inferior fibers of the piriformis, superior gemellus, obturator internus, and inferior gemellus.
Study Design: Repeated-measures laboratory controlled cadaveric study.
Methods: Seventeen hip joints from nine embalmed cadavers (5 male; 4 female) with an age between 49-96 years were skeletonized. Polypropylene strings were attached from the origin to insertion sites of the short external rotators. The change of length (mm) noted by excursion of the strings was used as a proxy for change in muscle length, when the hip was moved from the anatomical position to four specific stretch positions: 1) 45° internal rotation from hip neutral flexion/extension, 2) 45° external rotation from 90° hip and knee flexion, 3) 30° adduction from 90° of hip and knee flexion, and 4) 30° of adduction with the hip and knee flexed so the lateral malleolus contacted the lateral femoral epicondyle of the contralateral limb , were recorded.
Results: There was a significant effect on string displacement by stretch position, $F(15,166) = 14.67$, $p < .0005$; Wilk's = .097, partial n2 = .540. The greatest displacement of the strings corresponding to the superior piriformis, inferior piriformis, and the superior gemellus occurred in 30° adduction from 90° of hip and knee flexion. The obturator internus and inferior gemellus had the largest string displacement with 45° internal rotation from neutral flexion/extension.
Conclusions: While all stretch positions caused a significant string displacement indicating length changes of the deep rotators of the hip, the three stretch positions that caused the greatest change were: 1) 30° adduction from 90° of hip and knee flexion, 2) 45° internal rotation from neutral flexion/ extension, and 3) 45° external rotation with 90° hip and knee flexion.
Clinical Relevance: This study has clinical implications for the effectiveness of specific stretching techniques on the short external rotators of the hip with the potential to improve the validity of stretching protocols for patients with posterior hip or buttock pain. The piriformis and superior gemellus had a larger change in length when adducting the hip from 90° degrees of hip and knee flexion. The obturator internus and inferior gemellus had a greater length change when internally rotating the hip from neutral flexion/extension.
Level of Evidence: 3 *Key words:* anatomical modeling, posterior hip, reliability, stretching positions

52. EXERCISE

Eccentric ex for Psoas

CASE REPORT *IJSPT vol 12, issue 7*

THE REHABILITATION OF A RUNNER WITH ILIOPSOAS TENDINOPATHY USING AN ECCENTRIC-BIASED EXERCISE-A CASE REPORT

Carla Rauseo, DPT, CSCS[1]

ABSTRACT

Background and Purpose: While there is much discussion about tendinopathy in the literature, there is little reference to the less common condition of iliopsoas tendinopathy, and no documentation of the condition in runners. The iliopsoas is a major decelerator of the hip and eccentric loading of the iliopsoas is an important component of energy transfer during running. Eccentric training is a thoroughly researched method of treating tendinopathy but has shown mixed results. The purpose of this case report is to describe the rehabilitation of a runner with iliopsoas tendinopathy, and demonstrate in a creative eccentric-biased technique to assist with treatment. A secondary objective is to illustrate how evidence on intervention for other tendinopathies was used to guide rehabilitation of this seldom described condition.

Case Description: The subject was a 39-year-old female middle distance runner diagnosed with iliopsoas tendinopathy via ultrasound, after sudden onset of left anterior groin pain. Symptoms began after a signifi- cant increase in running load, and persisted, despite rest, for three months. The intervention consisted of an eccentric-biased hip flexor exercise, with supportive kinetic chain exercises and progressive loading in a return to running program.

Outcomes: The Copenhagen Hip and Groin Outcome Score, the Visual Analogue Scale, the Global Rating of Change Scale and manual muscle testing scores all improved after 12 weeks of intervention with further improvement at the five-year follow up. After 12 weeks of intervention, the subject was running without restriction and had returned to her pre-injury running mileage at the five-year follow up.

Discussion: The eccentric-biased exercise in conjunction with exercises addressing the kinetic chain and a progressive tendon loading program, were successful in the rehabilitation of this subject with iliopsoas tendinopathy. This case report is the first to provide a description on the rehabilitation of iliopsoas tendinopathy, and offers clinicians suggestions and guidance for treatment and exercise choice in the clinical environment.

Level of Evidence: 5 ***Keywords:*** running, tendon, tendon pathology, tendon loading

Glut min and Med

RESEARCH REPORT

Gluteus Minimus and Gluteus Medius Muscle Activity During Common Rehabilitation Exercises in Healthy Postmenopausal Women

Authors: Charlotte Ganderton, PhD[1], Tania Pizzari, PhD[1], Jill Cook, PhD[1], Adam Semciw, PhD[1,2]

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**47 **Issue:**12 **Pages:**914–922 **DOI:** 10.2519/jospt.2017.7229

Abstract

Choose sectionChoose sectionTop of pageAbstract <<MethodsResultsDiscussionConclusionKey PointsReferences

Study Design

Controlled laboratory study, cross-sectional.

Background

The gluteus medius (GMed) and gluteus minimus (GMin) provide dynamic stability of the hip joint and pelvis. These muscles are susceptible to atrophy and injury in individuals during menopause, aging, and disease. Numerous studies have reported on the ability of exercises to elicit high levels of GMed activity; however, few studies have differentiated between the portions of the GMed, and none have examined the GMin.

Objectives

To quantify and rank the level of muscle activity of the 2 segments of the GMin (anterior and posterior fibers) and 3 segments of the GMed (anterior, middle, and posterior fibers) during 4 isometric and 3 dynamic exercises in a group of healthy, postmenopausal women.

Methods

Intramuscular electrodes were inserted into each segment of the GMed and GMin in 10 healthy, postmenopausal women. Participants completed 7 gluteal rehabilitation exercises, and average normalized muscle activity was used to rank the exercises from highest to lowest.

Results

The isometric standing hip hitch with contralateral hip swing was the highest-ranked exercise for all muscle segments except the anterior GMin, where it was ranked second. The highest-ranked dynamic exercise for all muscle segments was the dip test.

Conclusion

The hip hitch and its variations maximally activate the GMed and GMin muscle segments, and may be useful in hip muscle rehabilitation in postmenopausal women. *J Orthop Sports Phys Ther 2017;47(12):914–922. Epub 15 Oct 2017. doi:10.2519/jospt.2017.7229*

53. CORE

TA activation with core ex

IJSPT vol 12, issue 7
ORIGINAL RESEARCH

TRANSVERSUS ABDOMINIS ACTIVATION AND TIMING IMPROVES FOLLOWING CORE STABILITY TRAINING: A RANDOMIZED TRIAL

Noelle M. Selkow, PhD, ATC[1] Molly R. Eck, MS, ATC[1] Stephen Rivas, MS, ATC[1]

ABSTRACT
Background: Patients with non-specific low back pain (LBP) often present with a decrease in transversus abdominis (TrA) muscle activation and delayed onset of contraction with extremity movements, potentially contributing to recurrent LBP. Core stability is required for extremity movement and if the timing of when the TrA contracts is not corrected patients may continue to experience LBP.
Hypothesis/Purpose: The purpose of this study was to assess the effects of a four-week core stability rehabilitation program on TrA activation ratio and when the TrA initiates contraction during upper extremity movements in subjects with and without LBP. It was hypothesized that those with LBP would experience greater changes in TrA activation and onset of contraction by the TrA compared to the healthy group.
Study Design: Randomized Clinical Trial
Methods: Forty-two participants volunteered (21 healthy and 21 LBP). Ultrasound imaging measured the TrA activation ratio and time of initial contraction of the TrA during upper extremity movement into flexion. Half of the healthy and LBP participants were assigned to the exercise group. Participants reported twice a week to the athletic training facility to complete an exercise progression of three exercises. After four weeks, all participants returned to have TrA activation and timing measured again.
Results: Pertaining to demographics, there were no differences between the healthy and LBP participants. There was a group interaction for both TrA activation ratio (p=.049) and onset of initial contraction (p=.008). Those in the exercise group showed an increase in TrA activation ratio (1.85 ± 0.09) compared to the control group (1.79 ± 0.08), as well as an improvement in the onset of contraction (2.07 ± 0.08 seconds) compared to the control group (2.23 ± 0.09 seconds) after the four-week rehabilitation program. Strong effect sizes for TrA activation ratio (0.71 [0.06-1.35]) and initial onset of TrA contraction (-1.88 [-2.63 - -1.11]) were found indicating clini- cal differences related to the interventions.
Conclusion: TrA activation and timing were altered following a four-week core stability program in people with and without LBP. Clinicians should consider incorporating these exercises for improving the function of the TrA.
Level of Evidence: Therapy, level 2b ***Key words:*** core stabilization exercises, low back pain, ultrasound imaging

56. ATHLETICS

Asthma

Med Sci Sports Exerc. 2017 Nov 7. doi: 10.1249/MSS.0000000000001478.

The Role of Airway Inflammation and Bronchial Hyperresponsiveness in Athlete's Asthma.

Stang J[1], Sikkeland LIB[1,1], Tufvesson E[1], Holm AM[1,1], Stensrud T[1], Carlsen KH[1,]
Author information

Abstract
PURPOSE:
Asthma is frequently reported in endurance athletes. The aim of the present study was to assess the long-term airway inflammatory response to endurance exercise in high-level athletes with and without asthma.

METHODS:
In a cross-sectional design, 20 asthmatic athletes (10 swimmers, 10 cross-country skiers), 19 athletes without asthma (10 swimmers, 9 cross-country skiers) and 24 healthy non-athletes completed methacholine bronchial challenge, lung function tests and sputum induction on two separate days. All athletes competed on a national or international level and exercised ≥10 hours/week. The non-athletes exercised ≤5 hours/week and reported no previous lung disease. Bronchial hyperresponsiveness (BHR) was defined as a methacholine provocation dose causing 20% decrease (PD20met) in the forced expiratory volume in one second (FEV1) of ≤8 µmol.

RESULTS:
BHR was present in 13 asthmatic athletes (62%), 11 healthy athletes (58%) and eight healthy non-athletes (32%) and the prevalence differed among groups (p=0.005). Sputum inflammatory and epithelial cell counts did not differ between groups and were within the normal range. Median (25th to 75th percentiles) sputum interleukin (IL)-8 was elevated in both asthmatic (378.4 [167.0, 1123.4]) and healthy (340.2 [175.5, 892.4]) athletes as compared to healthy non-athletes (216.6 [129.5, 314.0], p=0.02). No correlations were found between PD20met and sputum cell counts.

CONCLUSION:
Independent of asthma diagnosis, a high occurrence of BHR and increased sputum IL-8 were found in athletes as compared to non-athletes. Airway inflammation or epithelial damage were not related to BHR.

59. PAIN

Endogenous pain modulation

J Pain. 2017 Nov 27. pii: S1526-5900(17)30774-5. doi: 10.1016/j.jpain.2017.11.004.

Endogenous Pain Modulation Induced by Extrinsic and Intrinsic Psychological Threat in Healthy Individuals.

Gibson W[1], Moss P[2], Cheng TH[1], Garnier A[1], Wright A[3], Wand BM[1].

Many factors interact to influence threat perception and the subsequent experience of pain. This study investigated the impact of observing pain (extrinsic threat) and intrinsic threat of pain to oneself on pressure pain threshold (PPT). Forty socially-connected pairs of healthy volunteers were threat-primed and randomly allocated to experimental or control roles. An experimental pain modulation paradigm was applied, with non-nociceptive threat cues used as conditioning stimuli. In sub-study 1, the extrinsic threat to the experimental participant was observation of the control partner in pain. The control participant underwent hand immersion in noxious and non-noxious water baths in randomized order. Change in the observing participant's PPT from baseline to mid and post-immersion was calculated. A significant interaction was found for PPT between conditions and test time: $F_{(2,78)}=24.9$, $p< 0.005$. PPT increased by 23.6%±19.3% between baseline and 'during' hand immersion: ($F_{(1, 39)}=43.7$, $p< 0.005$). Sub-study 2 investigated threat of imminent pain to self. After a 15-minute break, the experimental participant's PPT was re-tested ('baseline 2').

Threat was primed by suggestion of whole arm immersion in an icier, larger water bath. PPT was tested immediately before anticipated arm immersion, after which the experiment ended. A significant increase in PPT between 'baseline 2' and 'pre-immersion' was seen ($t=-7.6$, $p=0.005$), a pain modulatory effect of 25.8±20.7%.

Extrinsic and intrinsic threat of pain, in the absence of any afferent input therefore influences pain modulation. This may need to be considered in studies that employ noxious afferent input with populations who show dysfunctional pain modulation.

Social training

ORIGINAL RESEARCH

Improved health-related quality of life, participation, and autonomy in patients with treatment-resistant chronic pain after an intensive social cognitive intervention with the participation of support partners

Authors Jongen PJ, Ruimschotel RP, Museler-Kreijns YM, Dragstra TMC, Duyverman L, Valkenburg-Vissers J, Cornelissen J, Lagrand R, Donders R, Hartog A
DOI https://doi.org/10.2147/JPR.S137609
Checked for plagiarism Yes

Abstract: Despite the availability of various specific treatments, most patients with chronic pain (CP) consider their pain problem as undertreated. Recently, multiple sclerosis (MS) patients who were given an intensive 3-day social cognitive treatment with the participation of support partners experienced lasting improvements in health-related quality of life (HRQoL) and self-efficacy.

In this study, a similar intervention was given to treatment-resistant CP patients with stressors, relational problems with support partner, and distress, anxiety or depression. Before and 1, 3, and 6 months after the intervention, patients completed the Euro-Qol 5 Dimensions 5 Levels (EQ-5D-5L) and Impact on Participation and Autonomy (IPA) questionnaires (primary outcomes), and the Survey Of Pain Attitudes (SOPA), the Four-Dimensional Symptom Questionnaire (4DSQ) (distress, depression, anxiety, and somatization), and Visual Analog Scale for pain intensity, whereas the support partners completed the Caregiver Strain Index (CSI) questionnaire. Differences between baseline and post-treatment were tested via paired *t*-tests (significance level 0.05). Of the 39 patients who were included, 34 (87.2%) completed the 3-day treatment. At 1, 3, and 6 months, improvements were seen in EQ-5D-5L-Index (+40.6%; +22.4%; +31.7%), Health Today (+61.8%; +36.3%; +46.8%), Control attitude (+45.8%; not significant [NS]; +55.0%) and decreases in IPA-Problems (−14.8%; NS; −20.4%), Harm attitude (−18.9%; −15.0%; −17.7%), Distress (−17.7%; −31.8%; −37.1%), and Depression (−37.4%; −31.4%; −35.7%) scores. The CSI score had decreased by −29.0%, −21.4%, and −25.9%, respectively.

In conclusion, after an intensive 3-day social cognitive intervention, treatment-resistant CP patients experienced substantial and lasting improvements in HRQoL and in problematic limitations to participation and autonomy, in association with improvements in pain attitudes, depression, and distress. To assess whether this innovative approach may be an effective treatment for this subgroup of CP patients, future randomized controlled studies are needed.

62 A. NUTRITION/VITAMINS

Med diet & CV disease

Eur J Nutr. 2017 Nov 25. doi: 10.1007/s00394-017-1582-0.

Mediterranean diet and cardiovascular disease: a systematic review and meta-analysis of observational studies.

Rosato V[1], Temple NJ[2], La Vecchia C[1], Castellan G[3], Tavani A[4], Guercio V[5].
Author information

Abstract
PURPOSE:
To provide evidence of the relationship of Mediterranean diet (MD) on incidence/mortality for cardiovascular disease (CVD), coronary/ischemic heart disease (CHD)/acute myocardial infarction (AMI) and stroke (ischemic/hemorrhagic) by sex, geographic region, study design and type of MD score (MDS).
METHODS:
We performed a systematic review and meta-analysis of observational studies. Pooled relative risks (RRs) were calculated using random-effects models.
RESULTS:
We identified 29 articles. The RR for the highest versus the lowest category of the MDS was 0.81 (95% CI 0.74-0.88) for the 11 studies that considered unspecified CVD, consistent across all strata. The corresponding pooled RR for CHD/AMI risk was 0.70 (95% CI 0.62-0.80), based on 11 studies. The inverse relationship was consistent across strata of study design, end point (incidence and mortality), sex, geographic area, and the MDS used. The overall RR for the six studies that considered unspecified stroke was 0.73 (95% CI 0.59-0.91) for the highest versus the lowest category of the MDS. The corresponding values were 0.82 (95% CI 0.73-0.92) for ischemic (five studies) and 1.01 (95% CI 0.74-1.37) for hemorrhagic stroke (four studies).
CONCLUSIONS:
Our findings indicate and further quantify that MD exerts a protective effect on the risk of CVD. This inverse association includes CHD and ischemic stroke, but apparently not hemorrhagic stroke.

Anti inflammatory diet

Anti-inflammatory diet: What to know
Healthline/Medical News Today | December 06, 2017
The human body uses inflammation to help fight illness and also protect areas from further harm. In most cases, inflammation is a necessary part of the healing process. However, some medical conditions cause faulty inflammatory responses. These are called chronic inflammatory diseases. One of the best measures a person can take to prevent or reduce inflammation is to try an anti-inflammatory diet. An anti-inflammatory diet involves eating certain foods and avoiding others in order to minimize the symptoms of chronic inflammatory diseases. **What is an anti-inflammatory diet?** An anti-inflammatory diet consists of foods that reduce inflammatory responses. This diet involves replacing sugary, refined foods with whole, nutrient-rich foods. An anti-inflammatory diet also contains increased amounts of antioxidants, which are reactive molecules in food that reduce the number of free radicals. Free radicals are molecules in the body that may damage cells and increase the risk of certain diseases. Many popular diets already follow anti-inflammatory principles. For example, the Mediterranean diet contains fish, whole grains, and fats that are good for the heart. Researchhas shown that this diet can reduce the effects of inflammation on the cardiovascular system.**What conditions can an anti-inflammatory diet help?** Doctors, dietitians, and naturopaths recommend anti-inflammatory diets as a complementary therapy for many conditions that are worsened by chronic inflammation. An anti-inflammatory diet can help many conditions, including:
rheumatoid arthritis , psoriasis asthma eosinophilic esophagitis Crohn's disease colitis inflammatory bowel disease diabetes obesity metabolic syndrome heart disease lupus Hashimoto's disease
Additionally, eating an anti-inflammatory diet can help reduce the risk of certain cancers, including colorectal cancer.
Foods to eat Good choices for a person following an anti-inflammatory diet include the following:
dark leafy greens, including kale and spinach blueberries, blackberries, and cherries dark red grapes nutrition-dense vegetables, such as broccoli and cauliflower beans and lentils green tea red wine, in moderation avocado and coconut olives extra virgin olive oil walnuts, pistachios, pine nuts, and almonds cold water fish, including salmon and sardines turmeric and cinnamon dark chocolate spices and herbs
Foods to avoid The main foods that people following an anti-inflammatory diet should avoid include: processed meats sugary drinks trans fats, found in fried foods white bread white pasta gluten soybean oil and vegetable oil processed snack foods, such as chips and crackers desserts, such as cookies, candy, and ice cream excess alcohol too many carbohydrates

Some people find that foods in the nightshades family, such as tomatoes, eggplants, peppers, and potatoes, can trigger flares in some inflammatory diseases. There is limited evidence of this, but a person can try cutting nightshades from the diet for 2–3 weeks to see if their symptoms improve. There is some evidence that suggests a high-carbohydrate diet, even when the carbs are healthful, may promote inflammation. Because of this, many people on an anti-inflammatory diet choose to reduce their carbohydrate intake. **Can a vegetarian diet reduce inflammation?** People considering an anti-inflammatory diet may also want to consider eliminating meat in favor of vegetarian protein sources or fatty fish. Research suggests that people following a vegetarian diet have higher levels of plasma AA, a marker of overall health that is associated with lower levels of inflammation and heart disease. A 2017 study found that eating animal products increased the risk of systemic inflammation, while another study suggests that reduced inflammation is one of the key benefits of a vegan diet.**Anti-inflammatory diet tips** Anti-inflammatory diets may be a big adjustment for people who tend to eat different kinds of food. There are several things a person can do to make the transition to an anti-inflammatory diet easier, including: eating a variety of fruits and vegetables reducing the amount of fast food eaten eliminating soda and sugary beverages planning shopping lists to ensure healthful meals and snacks are on hand carrying small anti-inflammatory snacks while on the go drinking more water staying within the daily calorie requirements adding supplements, such as omega-3 and turmeric, to the diet exercising regularly getting the proper amount of sleep
What is inflammation? Inflammation is the body's response to illnesses including infections or injuries. The body's immune system sends an increased amount of white blood cells to the area fighting off the infection or injury. Inflammation is not usually a bad thing—it is just the body trying to protect itself from further injury or illness by increasing the immune response in the area being threatened by bacteria or injury. However, there are several chronic inflammatory diseases, such as arthritis, psoriasis, and asthma, that can cause the immune system to go into overdrive and attack healthy tissues. In addition to taking any prescribed medications, a person with an inflammatory disease can try to reduce inflammation by making changes to their diet. **Takeaway** Anti-inflammatory diets promote a reduction in inflammation. A person may be able to reduce their body's inflammatory response by implementing these healthful dietary changes. Reducing inflammation may help a person feel more comfortable by alleviating some symptoms of inflammation. Also, it may help the person avoid some of the potential health problems that chronic inflammation can cause or decrease the need for medication. A dietitian can help a person develop a dietary plan to tackle a chronic inflammatory condition. —Jenna Fletcher

Cheese improves cardiac health

Eating cheese every day may help to protect heart health

Healthline/Medical News Today

If you're a cheese lover, you will welcome the results of this new study with open arms. Researchers suggest that eating around 40 grams (or 1.41 ounces) of cheese every day could help to reduce the risk of heart disease and stroke. These new findings come from an analysis of 15 observational studies that looked at the effects of cheese intake on the risk of cardiovascular disease (CVD). Study co-author Li-Qiang Qin—who works in the Department of Nutrition and Food Hygiene at Soochow University's School of Public Health in China—and colleagues report their results in the *European Journal of Nutrition*. Cheese is undoubtedly one of our favorite foods. In 2015, the population of the United States consumed the equivalent of 37.1 pounds of cheese per person, with cheddar and mozzarella being the most popular choices. While cheese contains some nutrients that are beneficial to health—such as calcium, zinc, and vitamins A and B12—it is also high in saturated fats, which can increase cholesterol levels and raise the risk of heart disease and stroke. The new study, however, suggests that this popular dairy product could have the opposite effect on cardiovascular health. **CVD risk reduced by up to 18%** For their study, Qin and colleagues conducted a meta-analysis of 15 observational studies that investigated how cheese consumption influenced the total risk of CVD, as well as the risks of coronary heart disease (CHD) and stroke. In total, the studies included more than 200,000 participants, and the effects of cheese intake were monitored for more than 10 years. The majority of studies included subjects who were free of CVD at study baseline. **The analysis revealed that people who regularly consumed cheese were up to 18% less likely to develop CVD, up to 14% less likely to develop CHD, and up to 10% less likely to have a stroke, compared with those who had a low cheese intake.** The scientists report that these effects were strongest among participants who consumed around 40 grams, or 1.41 ounces, of cheese every day. In conclusion, they write: "This meta-analysis of prospective studies suggests a nonlinear inverse association between cheese consumption and risk of CVD." **Be cautious** The team's findings build on those of a widely publicized observational analysis that was published earlier this year, which linked cheese and other dairy products to a reduced risk of cardiovascular and all-cause mortality. But don't stock up on the cheddar just yet; both studies have their own limitations. Importantly, they are observational, so they do not prove a causal association between cheese intake and better cardiovascular health. What's more, both studies have links to the dairy industry; the earlier study received funding from the Global Dairy Platform, Dairy Research Institute, and Dairy Australia, while the latest study was conducted with the help of researchers from the Yili Group, a dairy company based in China. However, it is hard to conclude whether these associations had any influence on the study results. Until additional studies confirm such findings, it is important to remember that cheese is high in saturated fats, which can be harmful to heart health in high amounts. The American Heart Association recommend that around 5–6% of our daily calories should come from saturated fats and to switch to low-fat dairy products to help stay within this limit. —Honor Whiteman

Inflammatory and OA

European Journal of Nutrition pp 1–8|

The relationship between the dietary inflammatory index and prevalence of radiographic symptomatic osteoarthritis: data from the Osteoarthritis

Nicola Veronese itin Shivappa Brendon Stubbs Toby Smithn James R. Hébert Cyrus Cooper Giuseppe Guglielmi Jean-Yves Reginster Renè Rizzoli Stefania Maggi

Purpose

To investigate whether higher dietary inflammatory index (DII®) scores were associated with higher prevalence of radiographic symptomatic knee osteoarthritis in a large cohort of North American people from the Osteoarthritis Initiative database.

Methods

A total of 4358 community-dwelling participants (2527 females; mean age 61.2 years) from the Osteoarthritis Initiative were identified. DII® scores were calculated using the validated Block Brief 2000 Food-Frequency Questionnaire and scores were categorized into quartiles. Knee radiographic symptomatic osteoarthritis was diagnosed clinically and radiologically. The strength of association between divided into quartiles (DII®) and knee osteoarthritis was investigated through a logistic regression analysis, which adjusted for potential confounders, and results were reported as odds ratios (ORs) with 95% confidence intervals (CIs).

Results

Participants with a higher DII® score, indicating a more pro-inflammatory diet, had a significantly higher prevalence of radiographic symptomatic knee osteoarthritis compared to those with lower DII® score (quartile 4: 35.4% vs. quartile 1: 24.0%; $p < 0.0001$). Using a logistic regression analysis, adjusting for 11 potential confounders, participants with the highest DII® score (quartile 4) had a significantly higher probability of experiencing radiographic symptomatic knee osteoarthritis (OR 1.40; 95% CI 1.14–1.72; $p = 0.002$) compared to participants with the lowest DII® score (quartile 1).

Conclusions

Higher DII® values are associated with higher prevalence of radiographic symptomatic knee osteoarthritis.

63. PHARMACOLOGY

Catastrophic thinking and opioid use

J Am Board Fam Med. 2017 Nov-Dec;30(6):828-831. doi: 10.3122/jabfm.2017.06.170124.

Predicting Risk for Opioid Misuse in Chronic Pain with a Single-Item Measure of Catastrophic Thinking.

Lutz J[1], Gross R[2], Long D[1], Cox S[1].
Author information

Abstract
BACKGROUND:
Chronic pain patients are frequently treated with opioid medications in primary care, where brief measures of risk for opioid misuse have great utility. Catastrophic thinking is a clinically relevant and potentially modifiable factor associated with several chronic pain outcomes, including risk for opioid misuse. This study examined the utility of a single-item measure of pain-related catastrophizing in predicting risk of opioid misuse.

METHOD:
119 chronic pain patients completed the Coping Strategies Questionnaire catastrophizing item, Pain Catastrophizing Scale (PCS), and Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R). Area under the receiver operator curve (AUC) and linear regression were used to examine predictive utility of the catastrophizing item.

RESULTS:
The catastrophizing item demonstrated a fair ability to discriminate those with high risk for opioid misuse on the SOAPP-R (AUC = 0.74), whereas the PCS demonstrated good discrimination (AUC = 0.85). The single item alone accounted for 30% of variance in SOAPP-R scores.

CONCLUSION:
A single question assessing pain catastrophizing has utility for predicting risk for opioid misuse. In addition, it provides the primary care provider with information on a potentially modifiable risk factor that can be addressed within the context of a brief clinical visit.