

5. SURGERY

Factors for poor outcomes

European Spine Journal pp 1–10

Predicting clinical outcome and length of sick leave after surgery for lumbar spinal stenosis in Sweden: a multi-register evaluation

Hanna Iderberg Carl Willers Fredrik Borgström Rune Hedlund Olle Hägg Hans Möller
Ewald Ornstein Bengt Sandén Holger Stalberg Hans Torevall-Larsson Tycho Tullberg
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Purpose

Lumbar spinal stenosis (LSS) can be surgically treated, with variable outcome. Studies have linked socioeconomic factors to outcome, but no nation-wide studies have been performed. This register-based study, including all patients surgically treated for LSS during 2008–2012 in Sweden, aimed to determine predictive factors for the outcome of surgery.

Methods

Clinical and socioeconomic factors with impact on outcome in LSS surgery were identified in several high-coverage registers, e.g., the national quality registry for spine surgery (Swespine, FU-rate 70–90%). Multivariate regression analyses were conducted to assess their effect on outcome. Two patient-reported outcome measures, Global Assessment of leg pain (GA) and the Oswestry Disability Index (ODI), as well as length of sick leave after surgery were analyzed.

Results

Clinical and socioeconomic factors significantly affected health outcome (both GA and ODI). Some predictors of a good outcome (ODI) were: being born in the EU, reporting no back pain at baseline, a high disposable income and a high educational level. Some factors predicting a worse outcome were previous surgery, having had back pain more than 2 years, having comorbidities, being a smoker, being on social welfare and being unemployed.

Conclusions

The study highlights the relevance of adding socioeconomic factors to clinical factors for analysis of patient-reported outcomes, although the causal pathway of most predictors' impact is unknown. These findings should be further investigated in the perspective of treatment selection for individual LSS patients. The study also presents a foundation of case mix algorithms for predicting outcome of surgery for LSS.

6. PELVIC GIRDLE

SI pain in athletes

Sacroiliac Joint Dysfunction in the Athlete: Diagnosis and Management

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Extremity and Joint Conditions: Section Articles

Sacroiliac joint (SIJ) dysfunction is a common cause of low back pain in the athlete, especially in sports with repetitive, asymmetric loading.

Complex anatomy and broad pain referral pattern make diagnosis difficult. Identifying three or more positive physical examination maneuvers for the SIJ improves examination sensitivity and specificity. Imaging is rarely helpful in establishing the diagnosis but is often used to rule out other pathology. Conservative management with activity modification, medication, physical therapy, manipulation and bracing is first line treatment.

After at least 6 weeks of conservative efforts or if pain limits the athlete's tolerance of these measures, diagnostic and therapeutic intra-articular or periarticular injections or nerve blocks can be used. Radiofrequency ablation is recommended as the next approach for treatment. When all other options have been exhausted, surgical management can be considered.

For athletes, once the underlying dysfunction is adequately addressed, gradual progression to full participation is encouraged.

8. VISCERA

Coffee reduces Fatty Liver options

A systematic review and a dose-response meta-analysis of coffee dose and nonalcoholic fatty liver disease

Clinical Nutrition — Chen YP, et al. | December 07, 2018

Researchers conducted this systematic review and a dose-response meta-analysis to investigate the impact of coffee on nonalcoholic fatty liver disease (NAFLD) risk and its potential dose-response trends. Up until April 10, 2018, they searched the PubMed, Web of Science, MEDLINE, Cochrane, and Embase databases for relevant studies. A total of 7 eligible articles with 4,825 cases and 49,616 non-cases were identified. According to the findings obtained, consumption of > 3 cups of coffee were observed at a lower risk of NAFLD than < 2 cups per day.

While the risk of NAFLD was inversely related to coffee consumption, the relevance may not be very close.

14. HEADACHES

Carotid stiffness

Migraine and Markers of Carotid Atherosclerosis in Middle-Aged Women: A Cross-Sectional Study

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Objective.—This study evaluated the association between migraine and the markers of carotid artery disease.

Background.—Migraine increases the risk of cardiovascular events, but its relationship with vascular dysfunction is unclear.

Methods.—In this cross-sectional study, middle-aged women with no known cardiovascular diseases underwent clinical, neurological, and laboratory evaluations; pulse wave velocity (PWV) assessment; and carotid artery ultrasonography. We divided the participants based on the presence of migraine and, further, based on the type of migraine. Associations between migraine and carotid thickening (intima-media thickness >0.9 mm), carotid plaques, or arterial stiffening (PWV >10 m/s) were evaluated using a multiple regression analysis.

Results.—The study comprised 112/277 (40%) women with migraine, of whom 46/277 (17%) reported having an aura.

Compared to the non-migraineurs, the migraine with aura group had an increased risk of diffuse carotid thickening (3/46 [6.8%] vs 2/165 [1.3%], adjusted OR = 7.12, 95% CI 1.05–48.49). Migraine without aura was associated with a low risk of carotid plaques (3/66 [4.7%] vs 26/165 [16.7%], adjusted OR = 0.28, 95% CI 0.08–0.99) and arterial stiffening (21/66 [34.4%] vs 82/165 [51.2%], adjusted OR = 0.39, 95% CI 0.19–0.79). There were no correlations between migraine characteristics and arterial stiffness or carotid thickness measurements.

Conclusion.—Migraine with aura is associated with an increased risk of carotid thickening, and migraine without aura is associated with a low risk of carotid plaques and arterial stiffening.

Migraine and markers of carotid atherosclerosis in middle-aged women: A cross-sectional study

Headache: The Journal of Head and Face Pain — Magalhães JE, et al. | December 06, 2018

As migraine has been identified to increase the risk of cardiovascular events, researchers evaluated its association with the markers of carotid artery disease. They performed a cross-sectional study of middle-aged women with no known cardiovascular diseases undergoing clinical, neurological, and laboratory evaluations; pulse wave velocity (PWV) assessment; and carotid artery ultrasonography. The participants were divided based on the presence of migraine and, further, based on the type of migraine.

Outcomes revealed an increased risk of carotid thickening in relation to migraine with aura, and a low risk of carotid plaques and arterial stiffening in relation to migraine without aura.

20 A. ROTATOR CUFF

Adding adduction does not seem to help

The Addition of Glenohumeral Adductors Coactivation to a Rotator Cuff Exercises Program for Rotator Cuff Tendinopathy: A Single-Blind Randomized Controlled Trial

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Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**0 **Issue:**0 **Pages:**1–43 **DOI:**10.2519/jospt.2019.8240

Study Design Single-blind, randomized controlled trial.

Background

Treatments for rotator cuff (RC) tendinopathy include RC muscle strengthening to promote better muscle recruitment in order to minimize subacromial narrowing during active movement. Glenohumeral adductors recruitment has also been shown to prevent such narrowing in asymptomatic individuals; therefore, adding glenohumeral adductor coactivation during RC strengthening could enhance the efficacy of RC strengthening. No study has, however, explored its benefits.

Objectives To compare the short-term efficacy of adding glenohumeral adductor coactivation (RCEx+coactivation) to a RC strengthening program (RCEx) to improve function, reduce symptoms and increase acromiohumeral distance (AHD) in adults with RC tendinopathy.

Methods

Forty-two participants with RC tendinopathy were randomly assigned to RCEx (strengthening of the scapular and RC muscles) or RCEx+coactivation (addition of pectoralis major and latissimus dorsi recruitment while performing RC strengthening) group. The daily programs were performed at home for 6 weeks, with a supervised training and follow-up sessions. Functional limitations/symptoms (Disabilities of Arm, Shoulder and Hand score [DASH – primary outcome], Western Ontario Rotator Cuff index [WORC]), pain (Visual Analogue Scale [VAS]) and AHD were measured at baseline, 3 weeks and 6 weeks. Data were analyzed using mixed model ANOVAs.

Results

No significant Group x Time interaction was observed for DASH, WORC, VAS and AHD ($p \geq .055$). Significant time effects were obtained for the WORC and VAS ($p < .001$).

Conclusion

The present findings show that adding glenohumeral adductor coactivation to a RC strengthening program does not result in improved short-term efficacy in any of the measured outcomes.

Level of Evidence Therapy, level 1b. *J Orthop Sports Phys Ther*, Epub 30 Nov 2018. doi:10.2519/jospt.2019.8240

26. CARPAL TUNNEL SYNDROME

Manual therapy helps carpal tunnel

Cost-Effectiveness Evaluation of Manual Physical Therapy Versus Surgery for Carpal Tunnel Syndrome: Evidence From a Randomized Clinical Trial

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Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**0 **Issue:**0 **Pages:**1–27 **DOI:**10.2519/jospt.2019.8483

Study Design A randomized clinical trial.

Background

Carpal tunnel syndrome (CTS) results in substantial costs for the society and can be treated by either nonsurgical or surgical approaches.

Objective To evaluate cost-effectiveness differences of manual physical therapy versus surgery in women with CTS.

Methods

One hundred and twenty women with clinical and electromyographic diagnosis of CTS were randomized through concealed allocation to either manual physical therapy or surgery. Interventions consisted of 3 sessions of manual physical therapy including desensitization manoeuvres of the central nervous system, or decompression/release of the carpal tunnel. Societal costs and health-related quality of life (estimated by the EuroQol-5D) over 1-year were used to generate incremental cost per quality-adjusted life year (QALY) ratios for each treatment.

Results

The analysis was possible for 118 (98%) patients. Incremental QALYs showed greater cost-effectiveness in favor of manual physical therapy (difference: 0.135, 95%CI 0.134-0.136). Manual therapy was significantly less costly (mean difference cost per patient: 2,576€; P<0.001) than surgery. Patients in the surgical group received a greater number of other treatments and made more visits to medical doctors than those receiving manual physical therapy (P=0.02). Absenteeism from paid labour was significantly higher in the surgery group (P<0.001). The major contributors to societal costs were the treatment protocol (surgery vs. manual therapy mean difference: 106,980€) and absenteeism from paid labour (surgery vs. manual physical therapy mean difference: 42,224€).

Conclusion

Manual physical therapy including desensitization manoeuvres of the central nervous system has found to be equally effective but less costly, i.e., more cost-effective, than surgery for women with CTS. From a cost-benefit perspective the proposed manual physical therapy intervention of CTS can be considered.

Level of Evidence Economic and decision analyses, level 1b. *J Orthop Sports Phys Ther*, Epub 30 Nov 2018. doi:10.2519/jospt.2019.8483

32 A. KNEE/ACL**Poor static balance following**

Arch Orthop Trauma Surg. 2018 Dec;138(12):1713-1718. doi: 10.1007/s00402-018-2984-z. Epub 2018 Jul 19.

Poor static balance is a risk factor for non-contact anterior cruciate ligament injury.

Oshima T¹, Nakase J², Kitaoka K³, Shima Y⁴, Numata H¹, Takata Y¹, Tsuchiya H¹.

BACKGROUND:

This prospective study aimed to investigate the relationship between static balance and the incidence of non-contact anterior cruciate ligament (ACL) injury in female high school athletes.

METHODS:

This study included 276 female high school handball or basketball players. At the time of admission, each subject's static balance was measured with a gravicorder, and the incidence of non-contact ACL injury was investigated in the 3 years until the student graduated. The measured parameters of postural sway were locus length per time (the distance that a center of gravity of the foot pressure moves per second) and environmental area (AR: the area surrounded by the integumentary covering of the trace of the center of gravity). Twenty-seven players (9.8%) experienced an ACL injury during the 3-year observation period. Twenty-four injured players sustained a non-contact injury and three injured players sustained a contact injury. In this study, the three contact injury players were excluded. We compared the differences in the static balance between injured and uninjured players.

RESULTS:

The locus length per time was significantly longer in injured than in uninjured players ($p = 0.046$). Though there was no statistically significant difference between the two groups in AR ($p = 0.190$), AR tended to be larger in the ACL injured group.

CONCLUSIONS:

This result shows that poor static balance is a risk factor for non-contact ACL injury.

33. MENISCUS

Conservative care compared to surgery

Archives of Orthopaedic and Trauma Surgery
December 2018, Volume 138, Issue 12, pp 1731–1739|

Arthroscopic meniscal surgery versus conservative management in patients aged 40 years and older: a meta-analysis

- Dong-Yeong Lee Young-Jin Park Hyun-Jung Kim Dae-Cheol Nam Jin-Sung Park Sang-Youn Song Dong-Geun Kang

Introduction

The efficacy of arthroscopic meniscus surgery in old aged patients remains controversial. The purpose of the present study was to review published studies comparing arthroscopic meniscal surgery with conservative management to treat meniscal injuries in patients 40 years of age and older.

Materials and methods

Several electronic databases were queried for articles published until July 2017 that evaluated outcomes of arthroscopic meniscal surgery in patients aged 40 years and older. Data searches, extraction, analysis, and quality assessment were performed according to the Cochrane Collaboration guidelines, and the clinical outcomes were evaluated using various outcome values. The results are presented as the standard mean difference (SMD) for continuous outcomes with 95% confidence intervals (CIs).

Results

Nine randomized controlled trials (RCTs) were included. There were no significant differences in clinical outcomes such as relief in knee pain (SMD = 0.01, 95% CIs = -0.15 to 0.18, $I^2 = 38%$) and improved knee function (SMD = 0.01, 95% CIs = -0.19 to 0.21, $I^2 = 57%$) between arthroscopic meniscal surgery and conservative management for degenerative meniscal tears.

Conclusions

The efficacy of arthroscopic surgery was not superior to conservative management in this type of patients. Therefore, arthroscopic meniscal surgery should not be recommended as a first choice of treatment for degenerative meniscal tears. In patients over 40 years of age, arthroscopic surgery should be cautiously considered for degenerative meniscal tears and only when there has not been a satisfactory response to conservative management

35. KNEE/TOTAL

Uni verses total

European Journal of Orthopaedic Surgery & Traumatology pp 1–9|

Unicompartmental versus total knee arthroplasty for knee osteoarthritis

- Filippo Migliorini Markus Tingart Marc Niewiera Björn Rath Jörg Eschweiler

Purpose

In the last couple of years, a significant amount of studies comparing the UKA and TKA for unicompartmental knee osteoarthritis have been published. However, there is a lack of recent meta-analysis comparing the two implants. Since the number of performed UKAs is currently increasing and the indications are obsolete, it becomes important to update current evidences and outcomes. With these premises, a meta-analysis of clinical trials comparing UKA versus TKA was conducted.

Methods

In October 2018, the following databases were accessed: Cochrane Systematic Reviews, Scopus, PubMed and Google Scholar. According to the Oxford Center of Evidence-based Medicine, level of evidence articles I to III were included. Only studies reporting quantitative data concerning the outcomes of interest were included. For the statistical analysis and the methodological quality assessment, we referred to the Review Manager Software 5.3. Dichotomous data were analyzed through the Mantel–Haenszel statistical method with the odd ratio effect measure. For continuous data, the inverse variance statistical method was used with the mean difference effect measure. A confidence interval of 95% was considered for analysis. To evaluate study heterogeneity, both Chi-square and Higgins tests were performed. Values of $P < 0.05$ were considered statistically significant.

Results

The overall methodological quality assessment was moderate. The risk of publication's bias was moderate. We enrolled in this study a total of 13,789 patients. The mean follow-up was 42.69 months. The UKA evidenced increased risk of revision's surgeries (OR 2.16, $P > 0.0001$). All the other scores of interest were in favor of the UKA: Oxford Knee Score, KSS Clinical, WOMAC overall and related subscales. The UKA also reported better functional outcomes: KSS Function, longer walking distance, improvement of the joint flexion and ROM. Moreover, in the UKA group have been reported a shorter length of stay, reduced estimated total blood loss and shorter surgical duration.

Conclusion

The main findings of this meta-analysis are that UKA reported a reduced survivorship but better clinical and functional performances compared to TKA. Furthermore, shorter surgical duration, lower total estimated blood loss and quicker hospitalization length were observed in the UKA cohort.

Does age matter?

Arch Orthop Trauma Surg. 2018 Dec;138(12):1755-1763. doi: 10.1007/s00402-018-3041-7. Epub 2018 Sep 26.

Patient age of less than 55 years is not an independent predictor of functional improvement or satisfaction after total knee arthroplasty.

Clement ND¹, Walker LC², Bardgett M¹, Weir D¹, Holland J¹, Gerrand C¹, Deehan DJ¹.

INTRODUCTION:

Management of the young patient with end-stage osteoarthritis of the knee is difficult, with surgical options of osteotomy, partial or total knee arthroplasty (TKA). The primary aim of this study was to assess whether age of less than 55 years was an independent predictor of functional outcome and satisfaction after total knee arthroplasty (TKA). The secondary aims were to identify pre-operative differences in patient demographics, comorbidity and function between patients less than 55 years old compared to those 55 years old and over.

MATERIALS AND METHODS:

A retrospective cohort consisting of 2589 patients undergoing a primary TKA was identified from an established arthroplasty database. Patient demographics, comorbidity, Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Short Form (SF) 12 scores were collected pre-operatively and 1 year post-operatively. In addition, patient satisfaction was assessed at 1 year. Regression analysis was used to identify independent pre-operative predictors of change in the WOMAC and SF-12 scores, and patient satisfaction.

RESULTS:

Patients less than 55 years old were significantly less likely to be satisfied with the overall outcome of their TKA (OR 0.4, $p = 0.001$). After adjusting for confounding variables age group was not an independent predictor of overall satisfaction with overall outcome (OR 0.71, $p = 0.16$). Independent predictors of an increased risk of dissatisfaction with the overall outcome at 1 year were depression (OR 0.58, $p = 0.008$) and worse pre-operative SF-12 MCS ($p = 0.04$).

CONCLUSION:

Age of less than 55 years is not an independent predictor of functional outcome or rate of patient satisfaction after TKA. However, depression and poor mental health are significantly more prevalent in patients less than 55 years old and were independently associated with a lower satisfaction rate.

45 D. MANUAL THERAPY EXTREMITIES**MET effective at improving shoulder ROM**

The International Journal of Sports Physical Therapy | Volume 13, Number 6 | December 2018 | Page 1024

ORIGINAL RESEARCH ACUTE EFFECTS OF MUSCLE ENERGY TECHNIQUE AND JOINT MOBILIZATION ON SHOULDER TIGHTNESS IN YOUTH THROWING ATHLETES: A RANDOMIZED CONTROLLED TRIAL

Maddox L. Reed, MS, ATC1 Rebecca L. Begalle, PhD, ATC1 Kevin G. Laudner, PhD, ATC1

ABSTRACT

Background: Posterior shoulder tightness (PST), defined as limited glenohumeral (GH) horizontal adduction and internal rotation motion, is a common occurrence in overhead athletes, particularly baseball and softball players, as a result of the extreme forces on the GH joint and the high number of throwing repetitions. Despite clinical evidence suggesting the use of joint mobilizations and muscle energy techniques (MET) for treating PST, there currently are no data examining the overall effectiveness of joint mobilizations and MET to determine optimal treatment for posterior shoulder tightness.

Purpose: To compare the acute effectiveness of MET and joint mobilizations for reducing posterior shoulder tightness, as measured by passive GH horizontal adduction and internal rotation ROM, among high school baseball and softball players.

Study Design: Randomized controlled study **Methods:** Forty-two asymptomatic high school baseball and softball players were randomly assigned to one of three groups (14 MET, 14 joint mobilization, 14 control). Glenohumeral passive adduction and internal rotation ROM were measured in all participants in a pre-test post-test fashion. Between testing, the joint mobilization group received one application of GH posterior joint mobilizations. The MET group received one cycle of MET applied to the GH horizontal abductors. The control group received no intervention. Posttests measures were completed immediately following intervention or a similar amount of time resting for the control group and then again 15 minutes later.

Results: One-way analyses of covariance showed that the MET group had significantly more horizontal adduction ROM post-treatment compared to the control group ($p=0.04$). No significant differences existed between groups in horizontal adduction ($p>0.16$) or internal rotation ($p>.28$) or at the 15-minute posttests ($p>0.70$).

Conclusion: The results of this study indicate the application of MET to the horizontal abductors provides acute improvements to GH horizontal adduction ROM in high school baseball and softball players, while joint mobilizations provide no improvements. Level of Evidence: 1
Keywords: Baseball, glenohumeral joint, manual therapy, softball

Carpal tunnel

Cost-Effectiveness Evaluation of Manual Physical Therapy Versus Surgery for Carpal Tunnel Syndrome: Evidence From a Randomized Clinical Trial

Authors: César Fernández-de-las-Peñas, PT, PhD, DMSc^{1,2}, Ricardo Ortega-Santiago, PT, PhD^{1,2}, Homid Fahandezh-Saddi Díaz, MD, PhD³, Jaime Salom-Moreno, PT, PhD^{1,2}, Joshua A. Cleland, PT, PhD⁴⁻⁶, Juan A. Pareja, MD, PhD⁷, José L. Arias-Buría, PT, MSc, PhD^{1,2}

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**0 **Issue:**0 **Pages:**1–27 **DOI:**10.2519/jospt.2019.8483

Study Design A randomized clinical trial.

Background Carpal tunnel syndrome (CTS) results in substantial costs for the society and can be treated by either nonsurgical or surgical approaches.

Objective To evaluate cost-effectiveness differences of manual physical therapy versus surgery in women with CTS.

Methods

One hundred and twenty women with clinical and electromyographic diagnosis of CTS were randomized through concealed allocation to either manual physical therapy or surgery. Interventions consisted of 3 sessions of manual physical therapy including desensitization manoeuvres of the central nervous system, or decompression/release of the carpal tunnel. Societal costs and health-related quality of life (estimated by the EuroQol-5D) over 1-year were used to generate incremental cost per quality-adjusted life year (QALY) ratios for each treatment.

Results

The analysis was possible for 118 (98%) patients. Incremental QALYs showed greater cost-effectiveness in favor of manual physical therapy (difference: 0.135, 95%CI 0.134-0.136). Manual therapy was significantly less costly (mean difference cost per patient: 2,576€; P<0.001) than surgery. Patients in the surgical group received a greater number of other treatments and made more visits to medical doctors than those receiving manual physical therapy (P=0.02). Absenteeism from paid labour was significantly higher in the surgery group (P<0.001). The major contributors to societal costs were the treatment protocol (surgery vs. manual therapy mean difference: 106,980€) and absenteeism from paid labour (surgery vs. manual physical therapy mean difference: 42,224€).

Conclusion

Manual physical therapy including desensitization manoeuvres of the central nervous system has found to be equally effective but less costly, i.e., more cost-effective, than surgery for women with CTS. From a cost-benefit perspective the proposed manual physical therapy intervention of CTS can be considered.

Level of Evidence Economic and decision analyses, level 1b. *J Orthop Sports Phys Ther*, Epub 30 Nov 2018. doi:10.2519/jospt.2019.8483

48 B. TRIGGER POINTS NEEDLING

Dry needling does not improve force production

The Effects of Needling Therapies on Muscle Force Production: A Systematic Review and Meta-Analysis

Authors: Cody Mansfield, PT, DPT¹⁻³, Lucas VanEtten, PT, DPT², Richard Willy, PT, PhD⁴, Stephanie Di Stasi, PT, PhD⁵, Robert Magnussen, MD^{6,7}, Matthew Briggs, DPT, PhD^{6,7}

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2018 **Volume:**0 **Issue:**0 **Pages:**1–38 **DOI:**10.2519/jospt.2019.8270

Study Design

Systematic review with meta-analysis.

Background

Needling has been shown to decrease pain in the short-term; however, its effects on muscle force production are unclear.

Objective

Evaluate the evidence regarding the comparative effects of needling on muscle force production.

Methods

An electronic search was performed using keywords related to needling. Methodological quality of articles was appraised and effect sizes calculated. The strength of evidence was determined and meta-analysis performed when similar methods were used in studies for similar conditions.

Results

Twenty-one studies were included in the review with 9 deemed high quality (>6/10 on the PEDro scale), 11 fair quality (5-6/10), and 1 deemed poor quality (<5/10). Three meta-analyses were performed. There was moderate strength of evidence with medium effect sizes for needling therapy to enhance force production in those with neck pain, and very low strength of evidence of no effect for individuals with non-specific and post-operative shoulder pain and those with lateral epicondylalgia. Other studies not included in the 3 meta-analyses demonstrated no significant effect of needling on force production. These studies included individuals with carpal tunnel syndrome, knee osteoarthritis, ankle sprains, knee arthroscopy, or delayed onset muscle soreness.

Conclusion

The majority of studies suggest no effect of dry-needling on force production. High-quality studies with adequate power that control for the placebo effect and follow accepted reporting standards could make valuable contributions to this literature.

Level of Evidence Therapy, level 1a. *J Orthop Sports Phys Ther*, Epub 30 Nov 2018.
doi:10.2519/jospt.2019.8270

53. CORE**Core with shoulder injuries**

The International Journal of Sports Physical Therapy | Volume 13, Number 6 | December 2018 | Page 1015

ORIGINAL RESEARCH COMPARISON OF CORE STABILITY AND BALANCE IN ATHLETES WITH AND WITHOUT SHOULDER INJURIES

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ABSTRACT Background: Relationships between core stability and lower extremity injuries have been described in the literature; however, evidence of the relationship between upper extremity injuries and core stability and balance is limited.

Hypothesis/Purpose: The purpose of this study was to compare clinical measures of core stability and balance between athletes with and without non-traumatic shoulder injuries.

Study Design: Cross sectional.

Methods: Eighty athletes (54 males, age: 21.2±3.3 years) participated in this study. Forty athletes with a current shoulder injury were matched to healthy athletes by age, gender, BMI, and sport. Athletes completed clinical core stability tests including flexor and extensor endurance tests, double leg lower test (°) and balance tests including single leg stance under eyes open and eyes closed conditions, and the Y-balance test. MANOVAs were used to assess group differences.

Results: No statistically significant differences existed between athletes with and without shoulder injuries for clinical tests of core stability, $F(1,78)=0.97$, $p=0.41$; $\eta^2=0.04$. No statistically significant differences existed between injured athletes with and without shoulder injuries for static and dynamic balance measures, $F(1,78)=0.86$, $p=0.53$; $\eta^2=0.07$.

Conclusions: Although core stability is widely incorporated in rehabilitation of athletes with shoulder injuries, performance on these clinical tests did not differ in the group of athletes assessed in this study. Level of evidence: 3. Key words: Core stability, kinetic chain, shoulder injuries

55. SCOLIOSIS

Reduced activity noted on infants who develop scoliosis

Association between physical activity and scoliosis: A prospective cohort study

International Journal of Epidemiology — Tobias JH, et al. | December 10, 2018

Researchers performed the first prospective population-based study reporting the association between physical activity and scoliosis. Self-reported measures of physical ability/activity at ages 18 months and 10 years were obtained in the Avon Longitudinal Study of Parents and Children (ALSPAC) and by means of accelerometry, objective measures of physical activity were collected at age 11 years. They used the dxa scoliosis Method at age 15 years to detect scoliosis. In this study, they did not include participants with scoliosis at age 10 years.

According to findings, reduced physical ability and activity were observed as early as age 18 months in those who go on to develop scoliosis by age 15 years.

58. RUNNING**Injuries while preparing for a Marathon****Preparing for Half-Marathon: The Association Between Changes in Weekly Running Distance and Running-Related Injuries—Does It Matter How the Running Is Scheduled?**

Authors: Camma Damsted, MScPT¹, Erik Thorlund Parner, PhD², Henrik Sørensen, PhD¹, Laurent Malisoux, PhD³, Adam Hulme, PhD⁴, Nielsen Rasmus Oestergaard, PhD¹

Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2018 **Volume:**0 **Issue:**0 **Pages:**1–24 **DOI:**10.2519/jospt.2019.8541

Study Design

A prospective cohort study with a study period of 14-weeks.

Background

Sudden changes in training load have been suggested to play a key role in the development of running-related injury (RRI). Since the injury mechanism also depends on the runner's musculoskeletal load capacity, the running schedule undertaken prior to the sudden change may influence the amount of change a runner is able to tolerate before placing the runner at a high risk of RRI.

Objectives

To investigate the association between changes in weekly running distances and RRI, and to examine whether this association is modified by the type of running schedule followed.

Methods

A cohort of 261 healthy non-injured runners was included. Data on running activity were collected objectively on a daily basis using a Global-Positioning System watch or smartphone. RRIs were collected using e-mail-based weekly questionnaires. Primary exposure was changes in weekly running distances. Data were analyzed with time-to-event models producing cumulative risk difference (RD) as the measure of association.

Results

A total of 56 participants (21.5%) sustained an RRI during the 14-week study period. Twenty-one days into the study period significantly more runners were injured when increasing their weekly running distance between 20%-60% compared with increasing $\leq 20\%$ (RD_{21 days} = 22.6% (95% CI: 0.9%, 44.3%); $p=0.041$). No significant difference was found after 56 and 98 days. No significant effect-measure modification by running schedule was found.

Conclusion

Significantly more runners were injured 21 days into the study period when increasing their weekly running distance between 20%-60% compared with those increasing less than 20%.

Level of Evidence

Prognosis, level 1b. *J Orthop Sports Phys Ther*, Epub 7 Dec 2018. doi:10.2519/jospt.2019.8541

Older runners biomechanics

Influence of Aging on Lower Extremity Sagittal Plane Variability During 5 Essential Sub-phases of Stance in Male Recreational Runners

Authors: Jacqueline Morgan, DPT¹, Yong Ung Kwon, PhD², D.S. Blaise Williams III, PT, PhD³

Published: *Journal of Orthopaedic & Sports Physical Therapy*,
2018 **Volume:**0 **Issue:**0 **Pages:**1–29 **DOI:**10.2519/jospt.2019.8419

Study Design

Cross-sectional design.

Background

Inter-joint coordination variability measures the ability of the human system to regulate multiple movement strategies. Normal aging may reduce variability resulting in a less adaptive system. Additionally, when older runners are asked to run at speeds greater than preferred, this added constraint may place older runners at greater risk for injury.

Objectives

To examine the influence of normal aging on coordination variability across five distinct phases of stance in runners during preferred and fixed speeds.

Methods

Twelve older (≥ 60 y) and 12 (≤ 30 y) younger male recreational runners volunteered. 3D gait analyses were collected at preferred and fixed speeds. Stance phase (SP) was divided into 5 sub-phases: loading response (SP1), peak braking (SP2), peak compression (SP3), midstance (SP4), and peak propulsion (SP5). Continuous relative phase variability for sagittal plane joint pairs Hip-Knee (H-K), Knee-Ankle (K-A), and Hip-Ankle (H-A) were calculated. Repeated-measures linear mixed models were employed to compare variability for each joint pair.

Results

An Age by SP interaction was found for K-A ($p < 0.01$) and H-A ($p < 0.01$), while main effects for Age and SP were found for H-K ($p < 0.05$). Specifically, SP1-2 variability was lower in older runners and greater across stance for K-A and H-A, while SP4 was lowest in H-K and lower overall for older runners. No effects for running pace were found.

Conclusion

Less adaptive movement strategies seen in older runners may partially contribute to the increased eccentric stresses during periods of high load. *J Orthop Sports Phys Ther*, Epub 30 Nov 2018.
Doi:10.2519/jospt.2019.8419

59. PAIN

Pain related fear assessment

Assessment of pain-related fear in individuals with chronic painful conditions

Journal of Pain Research — Mittinty MM, et al. | December 04, 2018

As pain associated fear and anxiety can potentially influence the course of the pain experience, researchers examined whether the Fear of Pain Questionnaire-III (FPQ-III) can identify those who are likely to report longer duration and greater frequency of pain experience. They performed a cross-sectional study including 579 individuals from a community-based sample living with chronic pain. In addition, they tested the factor structure and validity of FPQ-III in the community-based sample.

As per findings, individuals at risk for prolonged continuous pain can be identified using the FPQ-III. In addition, the questionnaire seems to have applicability as a screening tool to measure fear and anxiety related to pain.

62 A. NUTRITION/VITAMINS**Organic foods reduce CA risk**

JAMA Intern Med. 2018 Dec 1;178(12):1597-1606. doi: 10.1001/jamainternmed.2018.4357.

Association of Frequency of Organic Food Consumption With Cancer Risk: Findings From the NutriNet-Santé Prospective Cohort Study.

Baudry J¹, Assmann KE¹, Touvier M¹, Allès B¹, Seconda L¹, Latino-Martel P¹, Ezzedine K^{1,2}, Galan P¹, Hercberg S^{1,3}, Lairon D⁴, Kesse-Guyot E¹.

IMPORTANCE:

Although organic foods are less likely to contain pesticide residues than conventional foods, few studies have examined the association of organic food consumption with cancer risk.

OBJECTIVE:

To prospectively investigate the association between organic food consumption and the risk of cancer in a large cohort of French adults.

DESIGN, SETTING, AND PARTICIPANTS:

In this population-based prospective cohort study among French adult volunteers, data were included from participants with available information on organic food consumption frequency and dietary intake. For 16 products, participants reported their consumption frequency of labeled organic foods (never, occasionally, or most of the time). An organic food score was then computed (range, 0-32 points). The follow-up dates were May 10, 2009, to November 30, 2016.

MAIN OUTCOMES AND MEASURES:

This study estimated the risk of cancer in association with the organic food score (modeled as quartiles) using Cox proportional hazards regression models adjusted for potential cancer risk factors.

RESULTS:

Among 68 946 participants (78.0% female; mean [SD] age at baseline, 44.2 [14.5] years), 1340 first incident cancer cases were identified during follow-up, with the most prevalent being 459 breast cancers, 180 prostate cancers, 135 skin cancers, 99 colorectal cancers, 47 non-Hodgkin lymphomas, and 15 other lymphomas. High organic food scores were inversely associated with the overall risk of cancer (hazard ratio for quartile 4 vs quartile 1, 0.75; 95% CI, 0.63-0.88; P for trend = .001; absolute risk reduction, 0.6%; hazard ratio for a 5-point increase, 0.92; 95% CI, 0.88-0.96).

CONCLUSIONS AND RELEVANCE:

A higher frequency of organic food consumption was associated with a reduced risk of cancer. If these findings are confirmed, further research is necessary to determine the underlying factors involved in this association.

Diet improves cognition**Dietary changes and cognition over 2 years within a multidomain intervention trial—The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER)**

Jenni Lehtisalo Tiia Ngandu

DOI: <https://doi.org/10.1016/j.jalz.2018.10.001>

Highlights

Improvements in diet in old age appear beneficial for executive functions.

- •Diet based on general dietary recommendations helps in maintaining global cognition.
- •Dietary intervention is feasible among older adults at risk for dementia.

Introduction

Association between healthy diet and better cognition is well established, but evidence is limited to evaluate the effect of dietary changes adopted in older age.

Methods

We investigated the role of dietary changes in the *Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability* (FINGER) with 1260 at-risk participants (60–77 years) who were randomized to intensive multidomain intervention (including dietary counseling) or regular health advice for 2 years. Parallel process latent growth curves of adherence to dietary recommendations and cognitive performance were analyzed.

Results

Adherence to healthy diet at baseline predicted improvement in global cognition, regardless of intervention allocation ($P = .003$). Dietary improvement was associated with beneficial changes in executive function, especially in the intervention group ($P = .008$; $P = .051$ for groups combined).

Discussion

Dietary changes initiated during the intervention were related to changes in executive function in 2 years. Long-term diet appeared more influential for global cognition.

62 B. CRYOTHERAPY**Diminished knee function following**

The International Journal of Sports Physical Therapy | Volume 13, Number 6 | December 2018 | Page 985

ORIGINAL RESEARCH THE EFFECT OF KNEE JOINT COOLING ON ISOKINETIC TORQUE PRODUCTION OF THE KNEE EXTENSORS: CONSIDERATIONS FOR APPLICATION

David Rhodes, PhD Jill Alexander

ABSTRACT

Background: Cryotherapy is commonly used in sport for the management of injury or during recovery, however the effects on concentric isokinetic strength appear unclear when considering the effect of joint cooling distal to the anterior thigh.

Purpose: The purpose of this study was to investigate the effect of cooling of the knee joint on quadriceps concentric isokinetic torque production. The results will inform the use of cryotherapy in practice. **Study Design:** Observational cohort, **Repeated Measures Methods:** Fourteen healthy male participants volunteered to take part in the study, all of whom regularly played competitive sports (mean age 20.24±1.51years; body mass 80.34±11.34Kg and height 179.45±6.59cm). 800 g of crushed ice was applied over the anterior knee joint for 20 minutes. Concentric quadriceps strength was measured using an isokinetic dynamometer (IKD) by measuring concentric peak (PkT) and average torque (AvT) outputs at pre-, immediately post and 20 minutes post cooling intervention. Additionally, skin surface temperature (Tsk), was measured using a hand-held thermometer at the patella at the same time intervals. Measurement was taken at the mid-point of each participant's patella, which was ascertained by measuring between the base and apex.

Results: Significant main effects reported for PkT, for time post-ice application ($p=0.02$, $2=0.161$). Post-hoc analysis revealed pre-ice application PkT to be significantly higher ($p\leq 0.003$) than all other timepoints. Quadratic regression analysis revealed a strong correlation between reductions in quadriceps torque production and time post application ($r=0.82$). The quadratic pattern of recovery displays a minima of 17.28-minutes and maxima of 34.56-minutes post ice application. AvT post-ice application demonstrated significant main effects for time post-ice application ($p=0.03$, $2=0.152$). Post-hoc analysis revealed pre-ice application AvT to be significantly higher ($p\leq 0.005$) than at all other timepoints. Quadratic regression analysis revealed a strong correlation between reductions in quadriceps torque production and time post application ($r=0.80$). The quadratic pattern of recovery displays a minima of 18.38-minutes and maxima of 36.76-minutes post ice application. Tsk reduced significantly, immediately post intervention ($p\leq 0.05$) without returning to baseline measures at 20-minutes post ($p\leq 0.05$).

Conclusions: Isokinetic peak torque values of the quadriceps diminish after cryotherapy application to the knee joint and are not fully recovered at 20 minutes post application on the knee. These findings could have potential implications for participation in activity immediately following ice application. **Level of Evidence:** 2b **Keywords:** Cryotherapy, Isokinetic Dynamometry, Knee, Quadriceps