

2. LBP

Muscle loss

The Natural Course of the Paravertebral Muscles After the Onset of Osteoporotic Vertebral Fracture

S Takahashi¹, M Hoshino², K Takayama³, R Sasaoka⁴, T Tsujio⁵, H Yasuda⁶, F Kanematsu⁷, H Kono⁸, H Toyoda¹, S Ohyama¹, Y Hori¹, H Nakamura¹

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This study revealed the change in the paravertebral muscles in patients with osteoporotic vertebral fracture. Increased pain is likely to be the driver for reduced activity, reduced activities of daily living, and consequent increase in fat infiltration of the paravertebral muscles, assumed to be secondary to reduced activity level or, conversely, partial immobilization.

Introduction: To reveal the time courses and impact of the paravertebral muscles (PVMs) on the healing process of osteoporotic vertebral fractures and risk factors for PVM decrease.

Methods: Consecutive patients with symptomatic osteoporotic vertebral fractures were enrolled in 11 hospitals. At enrollment and 3- and 6-month follow-up, PVMs, including the multifidus and erector spinae, were examined using magnetic resonance imaging (MRI). The PVM cross-sectional area (CSA) and fat signal fraction (FSF) were measured at L3. Low back pain (LBP), activities of daily living (ADLs), and risk factors for PVM decrease at the 6-month follow-up were investigated. PVM decrease was defined as > 1 standard deviation decrease of the CSA or > 1 standard deviation increase of the FSF.

Results: Among 153 patients who completed the 6-month follow-up, 117 (92 women, 79%) had MRI of L3 at enrollment and 3- and 6-month follow-up (mean age at enrollment, 78.5 years). The CSA did not change 6 months from onset (p for trend = 0.634), whereas the FSF significantly increased (p for trend = 0.033). PVM decrease was observed in 30 patients (26%). LBP was more severe, and delayed union was more frequent in patients with PVM decrease ($p = 0.021$ mixed-effect model and $p = 0.029$ chi-square test, respectively). The risk factors for PVM decrease were ADL decline at the 3-month follow-up (adjusted odds ratio = 5.35, $p = 0.026$).

Conclusion: PVM decrease was significantly related to LBP and delayed union after osteoporotic vertebral fracture onset. ADL decline at the 3-month follow-up was a risk factor for PVM decrease. Therefore, restoring ADLs within 3 months after onset is important.

5. SPINAL SURGERY

Risk factors lumbar fusion

The identification of risk factors for increased postoperative pain following minimally invasive transforaminal lumbar interbody fusion

Nathaniel W. Jenkins, Joon S. Yoo & Kern Singh

European Spine Journal (2020)

Purpose

To evaluate specific demographic and perioperative variables associated with higher inpatient pain scores following minimally invasive transforaminal lumbar interbody fusion (MIS TLIF).

Methods

Patients who underwent a single-level, primary MIS TLIF were retrospectively reviewed. Perioperative outcomes were collected, and postoperative inpatient VAS pain scores were measured. Both bivariate and stepwise multivariate Poisson regressions with robust error variance were used to assess risk factors for average inpatient pain score ≥ 5.0 . A final backward stepwise regression model was created using age, gender, smoking status, diabetes status, insurance status, BMI, comorbidity burden, pedicle screw laterality, operative time, and estimated blood loss.

Results

A total of 255 patients undergoing primary, single-level MIS TLIF were included. Age less than 50 years, workers' compensation insurance, preoperative VAS pain score ≥ 7 , and operative duration ≥ 110 min were associated with greater postoperative pain. However, other variables such as gender, BMI, smoking status, comorbidity burden, diabetes status, and pedicle screw laterality were not associated with increased postoperative pain.

Conclusion

The results of this study suggest that younger age, workers' compensation, elevated preoperative pain scores, and longer operative times are independently associated with greater inpatient pain following TLIF. Surgeons can use this information to better assess which patients may require additional pain control following TLIF. Patient expectations of postoperative outcomes in regard to pain and recovery may also be better managed.

7. PELVIC ORGANS/WOMAN'S HEALTH

PID and increased risk of ovarian CA

Association Between Pelvic Inflammatory Disease and Risk of Ovarian Cancer: An Updated Meta-Analysis

Jinlan Piao¹, Eun Ji Lee², Maria Lee³

PMID: 32037193 DOI: 10.1016/j.ygyno.2020.02.002

Background: Because of conflicting reports regarding the relationship between pelvic inflammatory disease (PID) and ovarian cancer, we performed an updated meta-analysis to investigate the association between PID and the risk of this malignancy.

Methods: Embase, PubMed, and Web of Science were searched up until November 1, 2019. Hazard ratios (HRs), along with 95% confidence intervals (CIs), were calculated to analyse outcomes.

Results: We included 16 studies in this meta-analysis. PID was associated with an increased risk of ovarian cancer (HR 1.18, 95% CI 1.13 to 1.22; $I^2 = 41\%$). In subgroup analyses according to ethnicity, study design, tumour invasiveness, and type of ovarian cancer, PID was significantly associated with ovarian cancer in all subgroups. The lowest heterogeneity ($I^2 = 0\%$ to 38%) was observed for associations between PID and ovarian cancer in Asian patients (HR 1.25, 95% CI 1.10 to 1.42), ovarian cancer in case-control studies (HR 1.15, 95% CI 1.08 to 1.23), invasive ovarian cancer (HR 1.25, 95% CI 1.20 to 1.30), borderline ovarian cancer (HR 1.28, 95% CI 1.19 to 1.37), and non-serous ovarian cancer (HR 1.15, 95% CI 1.07 to 1.24).

Conclusions: This updated meta-analysis demonstrated that PID is associated with an increased risk of ovarian cancer. Future large, well-designed studies are necessary to corroborate our findings.

Exercise impact of preterms**Pattern of respiratory muscle activity during exercise tests in children born prematurely**

Josy Davidson¹ Sabrina Pinheiro Tsopanoglou¹ Victor Zuniga Dourado²
Amélia Miyashiro Nunes dos Santos¹ Ana Lucia Goulart¹ Cesar F. Amorim³ ,
Dirceu Solé⁴
DOI: <https://doi.org/10.1016/j.jbmt.2020.02.003>

Introduction

Preterm children display only slightly lower exercise capacity than term children do during their development, despite their previous cardiopulmonary impairments. This raises doubts about the role of the respiratory muscles' influence on exercise capacity. This study aimed to compare respiratory muscle activity in pre-term and term children using an exercise test.

Methods

This cross-sectional study involved comparison of 35 term children and 39 matched pre-term children aged 6–9 years, who were born prematurely with a birth weight < 1,500 g. An adapted treadmill incremental test was utilized and surface electromyography of the sternocleidomastoid (SCM), upper trapezius (UT), and rectus abdominis (RA) muscles was performed. The root mean square was calculated every minute and compared between and within groups. A Monte Carlo simulation was also applied, and the area under the curve was calculated to evaluate the differences between groups.

Results

During the entire exercise, the SCM muscle activity was higher in pre-term children with a larger area under the curve than in the term children. There was no difference in the RA and UT muscle activity between groups throughout the test.

Conclusion

The results suggest a greater contribution of the SCM muscle in preterm children's performance than in term children's performance during high-intensity exercises.

Increased risk of breast CA with hormone therapy

ACCEPTED MANUSCRIPT

Underlying breast cancer risk and menopausal hormone therapy

Richard J Santen, Daniel F Heitjan, Anne Gompel, Mary Ann Lumsden, JoAnn V Pinkerton, Susan R Davis, Cynthia A Stuenkel

The Journal of Clinical Endocrinology & Metabolism,
gaa073, <https://doi.org/10.1210/clinem/dgaa073>

The recent Collaborative Group on Hormonal Factors in Breast Cancer (CGHFBC) publication calculated the **attributable risk** of breast cancer from use of estrogen alone and estrogen plus a synthetic progestogen for <5 to ≥ 15 years of use.

This CGHFB report calculated **attributable risk** based on their findings of relative risk from pooled data from 58 studies. Notably, neither the CGHFBC nor other previous studies have examined the effect of *underlying risk* of breast cancer on **attributable risk**. This omission prompted us to determine the magnitude of the effect of *underlying risk* on **attributable risk** in this Perspective. Meaningful communication of the potential risk of menopausal hormonal therapy requires providing women with the estimated risk above their existing *underlying risk* (i.e. **attributable risk**). Therefore we have estimated **attributable risks** from the data published by the CGHFBC, taking into account varying degrees of *underlying risk*. Based on the Endocrine Society Guideline on Menopausal Hormone Therapy (MHT), we divided groups into three categories of risk: low (1.5%), intermediate (3.0%), and high (6.0%) *underlying risk* of breast cancer over 5 years. In women taking estrogen plus a synthetic progestogen (E+SP) for 5–9 years, the **attributable risks** of MHT increased from **12**, to **42**, to **85** additional women per 1000 in the low, intermediate, and high risk groups respectively.

The **attributable risks** for estrogen alone were lower but also increased based on *underlying risk*. Notably, the **attributable risks** were amplified with duration of MHT use which increased both relative risk and breast cancer incidence.

8. VISCERA

IBS and fibromyalgia and spondyloarthopathy

Clinical and sonographic discrimination between fibromyalgia and spondyloarthopathy in inflammatory bowel disease with musculoskeletal pain

Federica Martinis, Ilaria Tinazzi, Elena Bertolini, Giorgia Citriniti, Angela Variola, Andrea Geccherle, Antonio Marchetta, Dennis McGonagle, Pierluigi Macchioni
Rheumatology, keaa036, <https://doi.org/10.1093/rheumatology/keaa036>

Objectives

Joint pain is common in subjects with IBD and is linked to several factors including SpA, drug therapy, concomitant OA or FM. The primary aim of this study was to estimate the prevalence of primary FM and concomitant FM and SpA in a cohort of patients with IBD utilizing clinical and US assessment.

Methods

A total of 301 consecutive cases with IBD attending two IBD Units were assessed by a rheumatologist for Assessment of SpondyloArthritis International Society criteria fulfilment for SpA or the 2010 ACR criteria for FM. Some 158 cases also had US enthesal examination on large insertions in the upper and lower limbs.

Results

Thirty-seven IBD patients (12%) met the ACR criteria for primary FM with 9% presenting with primary FM and 3.3% presenting with concomitant FM and SpA. Meeting FM criteria was not related to smoking, sedentary job, BMI or the presence of psoriasis. FM patients presented higher Leeds Enthesitis Index, BASDAI and BASFI scores than SpA patients. At US examination, patients who satisfied the Assessment of SpondyloArthritis International Society criteria for SpA had significantly higher mean enthesal or patient power Doppler positive as compared with the IBD and FM group ($P < 0.001$)

Conclusion

We found that FM occurred in 12% of SpA patients and in this setting SpA disease activity indices performed poorly. US examination in a large patient subgroup showed a promising discriminating capacity between FM and SpA in IBD patients.

13 D. SLEEP**Placebo and insomnia****Dynamic Features of Placebo Effects Addressing Persistent Insomnia Disorder: A Meta-Analysis of Placebo-Controlled Randomized Clinical Trials**Binghu Jiang¹, Dongmei He², Zhiwei Guo¹, Zhanhui Gao³

PMID: 32052501 DOI: 10.1111/jsr.12997

It has been accepted knowledge that placebo effects have been significant in insomnia clinical trials. However, the dynamic features of placebo effects have not been clarified. Our aim was therefore to conduct a meta-analysis of placebo-controlled randomized clinical trials to characterize the dynamic features of placebo effects addressing persistent insomnia disorder.

We performed a comprehensive literature search for randomized, placebo-controlled, double-blind clinical trials evaluating the efficacy of therapeutic regimens addressing persistent insomnia disorder. We pooled separate effect size estimates (Hedge's g) of placebo and regimen conditions across trials for outcome measures, and multilevel mixed-effects models were used to explore potential sources of heterogeneity. The placebo effects were significant and robust to improve the symptoms of insomnia, and subjective measures were significantly smaller than objective measures ($p < .001$), but placebo response rates were nearly identical between subjective and objective measures. The overall placebo effects were influenced by publication year ($p = .015$), treatment duration ($p = .010$), sample size ($p < .001$) and therapeutic regimen ($p < .001$). Placebo effects showed a diphasic feature within treatment duration: initially a decrease and subsequently being stable; a sustained decline trend after withdrawals; and a steady-to-upward trend for a mixed therapeutic regimens in a large-scale period over decades.

The dynamic features of placebo effects addressing persistent insomnia disorder may lead to the development and validation of dosing strategies that require less medication exposure to maintain clinical effects.

Pediatric CPAP**Auto CPAP for the treatment of obstructive sleep apnea in children**

Khaytin I, Tapia IE, Xanthopoulos MS, et al. | February 13, 2020 Journal of Clinical Sleep Medicine

In this retrospective study involving children with obstructive sleep apnea syndrome (OSAS), researchers sought to analyze the use of auto-titrating continuous positive airway pressure [CPAP] devices (autoCPAP) as an alternative to CPAP titration.

They assumed that autoCPAP-derived pressures (P_{MEAN} , $P_{PEAKMEAN}$, P_{90}) would be comparable to titration polysomnography [PSG] pressure (PPSG). The sample consisted of OSAS children initiated on autoCPAP between 2007 and 2017 who used autoCPAP for at least 2 hours per night and who had adequate titration PSG. Of the 110 children started on autoCPAP, 44 [age (median (IQR)) was 13.01 (9.98, 16.72) years] have met requirements for inclusion. Median regression analysis showed that autoCPAP-derived pressures remained significant predictors of PPSG after adjusting for patient features like age, gender, obesity status.

No significant interactions were found between these patient characteristics and autoCPAP-derived pressures. Findings indicated that autoCPAP-derived pressures correlate with the titration PSG derived pressures. The outcomes suggested that autoCPAP can be used in the pediatric population and can assess pressures that are similar to the titration pressures.

Autonomic dysfunction in sleep problems

Frequency and severity of autonomic symptoms in idiopathic hypersomnia

Journal of Clinical Sleep Medicine — Miglis MG, et al. | February 13, 2020

In a large online cohort of patients with idiopathic hypersomnia (IH), researchers quantified the symptoms of autonomic nervous system (ANS) dysfunction and ascertained whether the severity of these symptoms interacts with sleepiness, fatigue, and quality of life.

Through the website of the Hypersomnia Foundation, a US-based patient advocacy group, 138 IH patients and 81 age- and sex-matched controls were selected. By the study investigators, 24 confirmed IH patients were selected as a comparison group. All candidates finished a battery of online sleep, autonomic, and quality of life questionnaires including the composite autonomic symptom score-31 (COMPASS-31).

According to findings, ANS dysfunction symptoms are common in IH. ANS symptom burden was also positively correlated with sleepiness and negatively related to quality of life.

Post trauma sleep and stress

A Mediational Analysis of Stress, Inflammation, Sleep, and Pain in Acute Musculoskeletal Trauma

Walton, David M. PT, PhD^{*}; Pourkazemi, Fareshteh PT, PhD[†]; Ghodrati, Maryam BScPT, MSc^{*}; Elliott, James M. PT, PhD[†]

The Clinical Journal of Pain: March 2020 - Volume 36 - Issue 3 - p 197-202

doi: 10.1097/AJP.0000000000000790

Objectives:

Differences in pain severity among acutely injured people may be related to the perceived stress of the event and pre-existing vulnerabilities. In this study, we test the hypotheses that pretrauma life stress influences posttrauma pain severity, and 2 potential mediating pathways, 1 biological (C-reactive protein, CRP) and 1 contextual (sleep quality).

Materials and Methods:

Data collected from participants within 3 weeks of a noncatastrophic musculoskeletal trauma were used in this observational cross-sectional mediation analysis. The primary outcome was pain severity as measured using the Brief Pain Inventory. Predictors were posttrauma CRP assayed from plasma, sleep interference measured by the Brief Pain Inventory, and a study-specific “General Life Stressors” scale. First, the sample was split into low and high life-stress groups, and mean differences in the pain and the predictor variables were explored by *t* test. Next, a mediation model was tested through a regression-based path analysis. The base model explored the predictive association between pretrauma life stress and posttrauma pain. Sleep quality and CRP concentration were then entered as possible mediators of the association.

Results:

The sample of 112 participants was 54.6% female, and 52.7% reported high pretrauma life stress. Mean differences in pain severity, sleep interference, and CRP was significant between the high-stress and low-stress groups. In path analysis, life stress explained 8.0% of the variance in acute pain severity, 6.3% of the variance in sleep interference, and 8.0% of the variance in CRP concentration, all *P*-value <0.05. In mediation analysis, the association between life stress and pain severity was fully mediated by sleep interference. CRP did not mediate the association.

Discussion:

Pretrauma life stress predicted pain severity, sleep interference, and plasma CRP. In mediation analysis, pretrauma stress was associated with pain severity only through its association with sleep interference, while CRP did not mediate the association. Implications of these results are discussed.

14. HEADACHES

Migraine and lateral geniculate nucleus

Altered lateral geniculate nucleus functional connectivity in migraine without aura: a resting-state functional MRI study

Di Zhang, Xiaobin Huang, Wen Su, Yuchen Chen, Peng Wang, Cunnan Mao, Zhengfei Miao, Chunmei Liu, Chenjie Xu, Xindao Yin & Xinying Wu

The Journal of Headache and Pain **volume 21**, Article number: 17 (2020)

Objectives

To investigate the structural and functional connectivity changes of lateral geniculate nucleus (LGN) and their relationships with clinical characteristics in patients without aura.

Methods

Conventional MRI, 3D structure images and resting state functional MRI were performed in 30 migraine patients without aura (MwoA) and 22 healthy controls (HC). The lateral geniculate nucleus volumes and the functional connectivity (FC) of bilateral lateral geniculate nucleus were computed and compared between groups.

Results

The lateral geniculate nucleus volumes in patient groups did not differ from the controls. The brain regions with increased FC of the left LGN mainly located in the left cerebellum and right lingual gyrus in MwoA compared with HC. The increased FC of right LGN located in left inferior frontal gyrus in MwoA compared with HC. The correlation analysis showed a positive correlation between VLSQ-8 score and the increased FC of left cerebellum and right lingual gyrus.

Conclusions

Photophobia in MwoA could be mediated by abnormal resting state functional connectivity in visual processing regions, the pain perception regulatory network and emotion regulation network. This result is valuable to further understanding about the clinical manifestation and pathogenesis of migraine.

Migraines and sensitivity**Fluctuations in local and widespread mechanical sensitivity throughout the migraine cycle: a prospective longitudinal study**

Gwendolyne G. M. Scholten-Peeters^{1*}, Michel W. Coppieeters^{1,2}, Tom S. C. Durge¹ and René F. Castien^{1,3,4}

Scholten-Peeters et al. The Journal of Headache and Pain (2020) 21:16
<https://doi.org/10.1186/s10194-020-1083-z>

Background: People with migraine have localised (i.e., cephalic) mechanical sensitivity. There is uncertainty regarding widespread (i.e., extra-cephalic) mechanical sensitivity and variations in mechanical sensitivity throughout the migraine cycle. Therefore, this study aimed (1) to comprehensively assess mechanical sensitivity in both cephalic and extra-cephalic regions during the preictal, ictal, postictal and interictal phases; and (2) to compare these findings with mechanical sensitivity at corresponding time-points and locations in healthy participants.

Methods: According to sample size calculations, 19 people with migraine and 19 matched healthy volunteers participated in a prospective longitudinal study. Pressure pain thresholds were evaluated in three cephalic regions (temporalis, upper trapezius and C1 paraspinal muscles) and two extra-cephalic regions (extensor carpi radialis and tibialis anterior muscle) with a digital algometer during the four phases of the migraine cycle in people with migraine and at corresponding intervals and locations in healthy participants. Linear mixed model analyses with a random intercept were used.

Results: People with migraine had increased mechanical sensitivity in cephalic and extra-cephalic regions in all phases of the migraine cycle compared to healthy participants. Furthermore, this mechanical sensitivity was more severe in the preictal, ictal and postictal phase compared to the interictal phase in cephalic and extra-cephalic regions.

Conclusion: People with migraine have localised as well as widespread mechanical sensitivity compared to healthy participants. This sensitivity is even more pronounced immediately before, during and after a migraine attack

22 A. SHOULDER IMPINGMENT

Subacromial distance

Correlation between acromiohumeral distance and the severity of supraspinatus tendon tear by ultrasound imaging in a Chinese population

Mingmin Xu, Zhenping Li, Youfa Zhou, Bin Ji, Suming Tian & Gang Chen

BMC Musculoskeletal Disorders volume 21,
Background

The aim of this study was twofold: (i) to investigate the intrarater reliability of acromiohumeral distance measurement; (ii) to assess the level of association between acromiohumeral distance measured by ultrasonography, and the degree of supraspinatus tendon tear, in patients suffering from chronic shoulder pain.

Methods

A cross-sectional, case-control study was carried out. A convenience sample comprising 59 patients with a unilateral supraspinatus tendon tear was assessed. Both shoulders of each patient were scanned by ultrasound, with the contralateral asymptomatic shoulders serving as the control group for comparison. Acromiohumeral distances of each shoulder were measured and analysed.

Results

Intrarater reliability was excellent for the ultrasound method of acromiohumeral distance measurement. The acromiohumeral distance of shoulders with full-thickness supraspinatus tendon tear was significantly smaller than that of joints with partial-thickness supraspinatus tendon tear and an intact supraspinatus tendon. There was a significant positive correlation between reduced acromiohumeral distance and the severity of a supraspinatus tendon tear.

Conclusions

Ultrasound is a reliable tool to measure acromiohumeral distance. A positive relationship was found between a narrowed acromiohumeral distance and the severity grading of a supraspinatus tendon tear. Reduced acromiohumeral distance can be considered a predictive parameter for a full-thickness supraspinatus tendon tear.

28. HIP REPLACEMENTS

Postoperative hip precautions

Are Postoperative Hip Precautions Necessary After Primary Total Hip Arthroplasty Using a Posterior Approach? Preliminary Results of a Prospective Randomized Trial

Matthew Tetreault, MD Faisal Akram, BS Jefferson Li, MD Tad Gerlinger, MD Craig Della Valle, MD Brett Levine, MD, MS

Published: February 15, 2020 DOI: <https://doi.org/10.1016/j.arth.2020.02.019>

Background

It is unclear whether posterior hip precautions after primary total hip arthroplasty (THA) reduce the incidence of early postoperative dislocation.

Methods

We performed a prospective randomized study to evaluate the effect of hip precautions on incidence of early dislocation following posterior approach primary THA. Between 1/2016 and 4/2019, 587 patients (594 hips) were consented and randomized into restricted or unrestricted groups. No significant demographic or surgical differences existed between groups. The restricted group was instructed to refrain from hip flexion $>90^\circ$, adduction across midline, and internal rotation for 6 weeks. 98.5% (585/594) of hips were available for minimum 6-week follow-up (291 restricted, 294 unrestricted). Power analysis showed that 579 hips per group are needed to demonstrate an increase in dislocation rate from 0.5% to 2.5% with 80% power.

Results

At average follow-up of 15 weeks (range, 6-88 weeks), there were 5 dislocations (incidence, 0.85%). Three posterior dislocations occurred in the restricted group at a mean of 32 days (range, 17-47 days) and two posterior dislocations occurred in the unrestricted group at a mean of 112 days (range, 21-203 days), with no difference in dislocation rate between groups (1.03% vs. 0.68%; OR=0.658, 95% CI=0.11-3.96, $p=0.647$). At 6 weeks, unrestricted patients endorsed less difficulty with activities of daily living, earlier return to driving, and more time spent side-sleeping ($p<0.05$).

Conclusion

Preliminary analysis suggests removal of hip precautions after posterior approach primary THA was not associated with early dislocation and facilitated return to daily functions. Investigation to appropriate power is warranted.

41 A. ACHILLES TENDON AND CALF**Non operative care****Plaster cast versus functional brace for non-surgical treatment of Achilles tendon rupture (UKSTAR): a multicentre randomised controlled trial and economic evaluation**

Prof Matthew L Costa PhD^a, Juul Achten PhD^a, Ioana R Marian MSc^b, Susan J Dutton MSc^b, Prof Sarah E Lamb PhD^{ac}, Benjamin Ollivere MD^d, Mandy Mareeza PhD^e, Prof Stavros Petrou PhD^{ef}, Rebecca S Kearney PhD^e

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The Lancet, Volume 395, Issue 10222, 8–14 February 2020, Pages 397–398

Background Patients with Achilles tendon rupture who have non-operative treatment have traditionally been treated with immobilisation of the tendon in plaster casts for several weeks. Functional bracing is an alternative non-operative treatment that allows earlier mobilisation, but evidence on its effectiveness and safety is scarce. The aim of the UKSTAR trial was to compare functional and quality-of-life outcomes and resource use in patients treated non-operatively with plaster cast versus functional brace.

Methods UKSTAR was a pragmatic, superiority, multicentre, randomised controlled trial done at 39 hospitals in the UK. Patients (aged ≥ 16 years) who were being treated non-operatively for a primary Achilles tendon rupture at the participating centres were potentially eligible. The exclusion criteria were presenting more than 14 days after injury, previous rupture of the same Achilles tendon, or being unable to complete the questionnaires. Eligible participants were randomly assigned (1:1) to receive a plaster cast or functional brace using a centralised web-based system. Because the interventions were clearly visible, neither patients nor clinicians could be masked. Participants wore the intervention for 8 weeks. The primary outcome was patient-reported Achilles tendon rupture score (ATRS) at 9 months, analysed in the modified intention-to-treat population (all patients in the groups to which they were allocated, excluding participants who withdrew or died before providing any outcome data). The main safety outcome was the incidence of tendon re-rupture. Resource use was recorded from a health and personal social care perspective. The trial is registered with ISRCTN, ISRCTN62639639.

Findings Between Aug 15, 2016, and May 31, 2018, 1451 patients were screened, of whom 540 participants (mean age 48.7 years, 79% male) were randomly allocated to receive plaster cast (n=266) or functional brace (n=274). 527 (98%) of 540 were included in the modified intention-to-treat population, and 13 (2%) were excluded because they withdrew or died before providing any outcome data. There was no difference in ATRS at 9 months post injury (cast group n=244, mean ATRS 74.4 [SD 19.8]; functional brace group n=259, ATRS 72.8 [20.4]; adjusted mean difference -1.38 [95% CI -4.9 to 2.1], $p=0.44$). There was no difference in the rate of re-rupture of the tendon (17 [6%] of 266 in the plaster cast group vs 13 [5%] of 274 in the functional brace group, $p=0.40$). The mean total health and personal social care cost was £1181 for the plaster cast group and £1078 for the functional brace group (mean between-group difference $-\text{£}103$ [95% CI -289 to 84]).

Interpretation

Traditional plaster casting was not found to be superior to early weight-bearing in a functional brace, as measured by ATRS, in the management of patients treated non-surgically for Achilles tendon rupture. Clinicians may consider the use of early weight-bearing in a functional brace as a safe and cost-effective alternative to plaster casting.

45 D. MANUAL THERAPY EXTREMITIES**Osteopathic care helps shoulder pain****Osteopathic treatment of patients with shoulder pain. A pragmatic randomized controlled trial.**

Florian Schwerla^{1,*} Torsten Hinse² Markus Klosterkamp² Thomas Schmitt² Michaela Ru"tz¹, Karl-Ludwig Resch³

DOI: <https://doi.org/10.1016/j.jbmt.2020.02.009>

Background

Shoulder complaints are common in the general population. Typically, the diagnosis of a specific pathology is lacking. The objective of this trial was to evaluate the effectiveness of an osteopathic treatment in patients suffering from shoulder pain.

Methods

A pragmatic randomized controlled trial was conducted in patients with a history of shoulder pain of 6 weeks to 12 months, and a pain intensity level of at least 40% on the visual analogue scale (VAS). Participants were identified from the general population in Germany and allocated by means of external randomization to an intervention group or a control group. Patients in the intervention group received five osteopathic treatments at intervals of two weeks. Treatment was custom tailored and based on osteopathic principles. Controls received their osteopathic treatment after an 8-week untreated waiting period. Primary outcome parameters were pain intensity and frequency, measured by VAS and Likert Scales. Secondary outcome parameters were shoulder specific pain and disability (Shoulder Pain and Disability Index, SPADI), and quality of life (SF-36).

Results

A total of 70 patients aged 25 to 70 years (average age 45.6 ± 13.4 years) were included, 36 in the intervention group and 34 in the control group. The inter-group comparison of changes revealed clinically relevant improvements in favor of the intervention group for the main outcome parameters maximal pain intensity (VAS: between group difference of means 41.5; 95% CI: 34.6 to 48.3; $p < 0.005$) and average pain intensity (VAS: between group difference of means 40.4; 95% CI: 33.2 to 47.5; $p < 0.005$). The proportion of participants with a low frequency of pain increased in the osteopathic group only (from 7 to 34 vs. 9 to 6 in the control group, $p = 0.006$), and the number of patients with a high frequency decreased in the osteopathic group only (from 29 to 2 vs. 25 to 28, $p < 0.0005$). Shoulder specific pain and disability also improved. The follow-up assessment in the intervention group showed further improvements.

Conclusions

Five osteopathic treatments over a period of eight weeks led to statistically significant and clinically relevant positive changes of pain and disability in patients suffering from shoulder pain.

48 A. STM**STM vs vibration****The immediate effect of IASTM vs. vibration vs. light hand massage on knee angle repositioning accuracy and hamstrings flexibility: a pilot study**

George A. Koumantakis^{1,2,3,*} Eleonora Roussou^{2,3} George A. Angoules^{2,3} Nikolaos A. Angoules^{2,3},
Theodoros Alexandropoulos^{2,3} Georgia Mavrokosta^{2,3} Prokopios Nikolaou^{2,3} Filippi
Karathanassi^{2,3},
Maria Papadopoulou^{2,3}

DOI: <https://doi.org/10.1016/j.jbmt.2020.02.007>

Introduction

The effectiveness of novel soft-tissue interventions relative to traditional ones requires further exploration. The purpose of this pilot study was to evaluate the immediate effect of Instrument Assisted Soft Tissue Mobilization (IASTM) compared to vibration massage or light hand massage on hamstrings' flexibility and knee proprioception.

Methods

16 healthy non-injured male participants (mean age 23.7 years, height 1.80 cms and body mass 77.7 kg) were randomly assigned to the following interventions: (a) 5min IASTM, (b) 5min Vibration Massage and (c) 8min Light Hand-Massage, sequentially delivered to all participants with an in-between 1-week time interval. A single application of each intervention was given over the hamstrings of their dominant leg (repeated measures under 3 different experimental conditions). An active knee angle reproduction proprioception test and the back-saver sit and reach flexibility test were performed before and immediately after each intervention. Reliability of outcomes was also assessed.

Results

Reliability for flexibility ($ICC_{3,1}=0.97-0.99/SEM=0.83-1.52$ cm) and proprioception ($ICC_{3,1}=0.83-0.88/SEM=1.63-2.02^\circ$) was very good. For flexibility, statistically significant immediate improvement ($p<0.001$) was noted in all 3 groups (1.61-3.23 cm), with no between-group differences. For proprioception, improvement in the IASTM (2.12°), Vibration Massage (0.32°) and Light Hand-Massage (1.17°) conditions was not statistically significant; no between-group differences were also evident.

Conclusions

Our findings indicate that muscle flexibility was positively influenced immediately after a single intervention of IASTM, Vibration Massage or Light Hand Massage. Proprioception changes were not statistically significant either within or between groups. Further evaluation of those interventions in a larger population with hamstrings pathology is required.

2. EXERCISE

Pilates and improved trunk endurance and flexibility

Effect of Pilates Method on muscular trunk endurance and hamstring extensibility in adolescents during twelve weeks training and detraining

González-Gálvez Noelia Vaquero-Cristobal Raquel Jorge Marcos-Pardo Pablo*
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Background

Thoracic hyperkyphosis and lumbar hyperlordosis have been associated with low values of flexibility in the hamstring muscle and endurance of the trunk musculature. These are areas that are worked using the Pilates Method (PM), however, there are only two studies that assess its effect on these variables in adolescence, and none that measure the retention time of the acquired improvements. The main objective of this research was to assess the effect of 10 minutes of adapted exercise program from PM in a Physical Education class (PE) for 12 weeks, on trunk muscle endurance and hamstring flexibility, and to evaluate the retention of resulting changes.

Methods

The sample consisted of 441 adolescents (age = 13.9 ± 1.3 years). The experimental group (EG) performed two weekly ten-minute sessions of PM for 12 weeks. The control group (CG) performed its usual sessions of PE. The endurance of the trunk flexor muscles and trunk extensor muscles, toe touch test (TT), bench trunk curl test (BTC) and the Biering-Sørensen test (SOR), were used to evaluate hamstring flexibility, before application of the program, at the end, 12 weeks later.

Results

A significant improvement was found in the EG for all variables analyzed, with an average improvement of 9.37 repetitions in the BTC test, 19.4 seconds in the SOR test and 2.75 in the TT test. The CG did not show significant changes. The EG's improvements were retained 12 weeks later, except in the SOR test.

Conclusion

The inclusion of 10 minutes of adapted exercise program from PM in PE classes, for two weekly sessions over 12 weeks, produces improvements in trunk muscle endurance and hamstring flexibility, and these gains are retained in the flexor and hamstring muscles 12 weeks later.

59. PAIN**CRPS and depression****Psychological Characteristics in Patients with Chronic Complex Regional Pain Syndrome: Comparisons with Patients with Major Depressive Disorder and Other Types of Chronic Pain**

Authors Park HY, Jang YE, Oh S, Lee PB **DOI** <https://doi.org/10.2147/JPR.S230394>

Objective: This study investigated psychological characteristics of patients with chronic complex regional pain syndrome (CRPS) and examined relationships between psychosocial factors and pain severity.

Methods: In total, 76 patients with CRPS, 95 patients with other types of chronic pain, 171 healthy controls, and 66 patients with major depressive disorder (MDD) were included. Minnesota Multiphasic Personality Inventory (MMPI-2) profiles and scores on the Beck Depression Inventory and State–Trait Anxiety Inventory were calculated. Pain intensity was measured using a visual analog scale (VAS).

Results: Patients with CRPS scored higher on the Hypochondriasis (Hs), Depression (D), Hysteria (Hy), Paranoia (Pa), and Psychasthenia (Pt) scales of the MMPI-2 compared to healthy controls. The CRPS group scored lower on the D, Psychopathic deviate (Pd), Pa, Pt, Schizophrenia (Sc), and Social introversion (Si) scales compared to the MDD group. Although CRPS patients reported higher levels of pain than patients with other types of pain, the MMPI profiles of the two pain groups did not differ significantly. Linear regression analyses revealed that pain severity was significantly associated with depression and scores on the Masculinity–Femininity (Mf) scale.

Conclusion: This is the first comparative study of the psychological characteristics of chronic CRPS patients, healthy controls, and patients with MDD. The neurotic profiles of CRPS patients were more psychologically adaptable than were those of patients with MDD; however, this profile was shared by both pain groups. The present findings further showed that, although pain severity was not a major contributor to depression, patients with CRPS should be evaluated for depressive symptoms.