

6. PELVIC GIRDLE

SI pain helped with glut max strengthening

The International Journal of Sports Physical Therapy | Volume 13, Number 1 | February 2018 | Page 114 **CASE SERIES**

STRENGTHENING THE GLUTEUS MAXIMUS IN SUBJECTS WITH SACROILIAC DYSFUNCTION

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ABSTRACT

Study design: Case series

Background and purpose: The literature has emphasized the use of exercise as an intervention for individuals with lumbopelvic pain. However, there is limited information to guide clinicians in exercise selection for those with sacroiliac (SI) joint dysfunction. Altered function of the gluteus maximus has been found in those with SI joint dysfunction. The objective of this case series was to assess the effectiveness of an exercise program directed at increasing gluteus maximus strength in those with clinical tests positive for SI joint dysfunction.

Case descriptions: The eight subjects in this series presented with lumbopelvic pain and clinical evidence of SI joint dysfunction. Each subject underwent 10 treatments over five weeks consisting of five exercises directed at strengthening the gluteus maximus.

Radiological assessment and clinical examination were performed to rule out potential concurrent pathologies. Visual analog pain scale, the Oswestry Disability Index, and strength assessed via hand held dynamometry were measured pre- and post-intervention.

Outcomes: A significant ($p < 0.001$) weakness in gluteus maximus was noted when comparing the uninvolved and involved sides pre-intervention. After completing the strengthening exercise program over 10 visits, statistically significant ($p < 0.002$) increases in gluteus maximus strength and function were found, as well as a decrease in pain. All subjects were discharged from physical therapy and able to return to their normal daily activities.

Discussion: The results of this case series support the use of gluteus maximus strengthening exercises in those with persistent lumbopelvic pain and clinical tests positive for SI joint dysfunction.

Key words: Hip, low back pain, rehabilitation, sacroiliac joint

7. PELVIC ORGANS/WOMAN'S HEALTH

Archives of Gynecology and Obstetrics pp 1–6| Cite as

Efficacy of aromatherapy for reducing pain during labor: a randomized controlled trial

Rajavadi Tanvisut Kuntharee Trairisilp Theera Tongsong

Background

Many strategies for labor pain management have been studied, including aromatherapy, which is a noninvasive, alternative medicine used as an adjunct for labor pain control. Nevertheless, the results were contradictory. Therefore, we conducted this study to determine the effectiveness of aromatherapy for reducing pain during labor.

Methods

A randomized controlled trial was carried out on Thai laboring primigravidae who were a low-risk singleton pregnancy undergoing vaginal delivery. All participants, both study and control group, received standard obstetric care. Aromatherapy was only provided to the study group during the first stage of labor. The women rated their pain intensity by rating scales at different stages of labor. The primary outcome was pain scores and the secondary outcomes were necessity of painkiller usage, labor time, aromatherapy-associated complications, route of delivery, and Apgar scores.

Results

A total of 104 women were recruited, 52 in each group. Baseline characteristics and baseline pain scores were comparable. The median pain score of latent and early active phase was lower in the aromatherapy group, 5 vs 6 and 7 vs 8, respectively. The mean differences of pain scores between latent and early active phase and the baseline were significantly lower in the aromatherapy group, 1.88 vs 2.6 ($p = 0.010$) and 3.82 vs 4.39 ($p = 0.031$), respectively. Late active phase pain scores and other perinatal outcomes were not significantly different.

Conclusion

Aromatherapy is helpful in reducing pain in latent and early active phase, and can probably be used as an adjunctive method for labor pain control without serious side effects.

Vestibulodynia and changes in the brain

J Pain. 2018 Jan 29. pii: S1526-5900(18)30027-0. doi: 10.1016/j.jpain.2017.12.269.

Disease-Related Microstructural Differences in the Brain in Females with Provoked Vestibulodynia.

Gupta A¹, Woodworth DC², Ellingson BM³, Rapkin AJ⁴, Naliboff B¹, Kilpatrick LA¹, Stains J⁵, Masghati S⁴, Tillisch K¹, Mayer EA¹, Labus JS⁶.

Provoked vestibulodynia (PVD) is a chronic pelvic pain disorder affecting 16% of the female population.

Neuroimaging studies have highlighted central abnormalities in PVD, similar to other chronic pelvic pain disorders, including brain regions involved in sensory processing and modulation of pain. The aim of the study was to determine alterations in the subvoxel, microstructural organization within tissues in PVD compared to healthy controls (HCs) and a disease control group (irritable bowel syndrome, IBS). Diffusion tensor imaging (DTI) magnetic resonance imaging (MRI) was conducted in 87 age-matched premenopausal females (29 PVD, 29 HCs, 29 IBS). Statistical parameter mapping of fractional anisotropy (FA) and mean diffusivity (MD) maps was used to identify microstructural difference in the brain specific to PVD or shared with IBS. PVD alterations in microstructural organization of the brain were predominantly observed in fibers associated with sensorimotor integration and pain processing that relay information between the thalamus, basal ganglia, sensorimotor and insular cortex. PVD, compared to HCs, displayed extensive increases in the FA of somatosensory and basal ganglia regions. In contrast, PVD and IBS subjects did not show any FA-related group differences. PVD subjects displayed greater MD in the basal ganglia compared to HCs (higher MD in the internal capsule and pallidum) and IBS (higher MD in the putamen and pallidum). Increases in MD were associated with increased vaginal muscle tenderness and vulvar pain.

The current findings highlight possible shared mechanisms between two different pelvic pain disorders, but also highlight the wide-spread alterations observed specifically in PVD compared to HCs.

KEYWORDS:

Provoked Vestibulodynia (PVD); brain; chronic pain; diffusion tensor imaging (DTI); irritable bowel syndrome (IBS)

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Mediterranean diet helps IVS

Hum Reprod. 2018 Jan 30. doi: 10.1093/humrep/dey003.

Adherence to the Mediterranean diet and IVF success rate among non-obese women attempting fertility.

Karayiannis D¹, Kontogianni MD¹, Mendorou C², Mastrominas M², Yiannakouris N¹.

STUDY QUESTION: Is adherence to the Mediterranean diet (MedDiet) associated with better IVF performance in women attempting fertility?

SUMMARY ANSWER: Greater adherence to the MedDiet, defined using the validated Mediterranean diet score (MedDietScore), was associated with a higher likelihood of achieving clinical pregnancy and live birth among non-obese women <35 years of age.

WHAT IS KNOWN ALREADY: Diet impacts fertility and certain nutrients and food groups appear to have a greater effect on reproductive health, but there are relatively few published data on the role of dietary patterns, and the MedDiet in particular, on assisted reproductive performance.

STUDY DESIGN, SIZE, DURATION: This prospective cohort study included 244 non-obese women (22-41 years of age; BMI < 30 kg/m²) who underwent a first IVF treatment in an Assisted Conception Unit in Athens, Greece, between November 2013 and September 2016. The study was designed to evaluate the influence of habitual dietary intake and lifestyle on fertility outcomes.

PARTICIPANTS/MATERIALS, SETTING, METHODS: Diet was assessed before the IVF treatment via a validated food-frequency questionnaire. Adherence to the MedDiet was assessed through the MedDietScore (range: 0-55), with higher scores indicating greater adherence. Intermediate outcomes (oocyte yield, fertilization rate and embryo quality measures) and clinical endpoints (implantation, clinical pregnancy and live birth) were abstracted from electronic medical records. Associations between MedDietScore and IVF outcomes were analysed using generalized linear models adjusting for age, ovarian stimulation protocol, BMI, physical activity, anxiety levels, infertility diagnosis, caloric intake and supplements use.

MAIN RESULTS AND THE ROLE OF CHANCE: No association of MedDietScore with any of the intermediate outcomes or with implantation was found. However, compared with women in the highest tertile of the MedDietScore (≥ 36 , $n = 86$), women in the lowest tertile (≤ 30 , $n = 79$) had significantly lower rates of clinical pregnancy (29.1 vs 50.0%, $P = 0.01$) and live birth (26.6 vs 48.8%, $P = 0.01$). The multivariable-adjusted relative risk (95% CI) for clinical pregnancy comparing women in the lowest with women in the highest tertile of the MedDietScore was 0.35 (0.16-0.78; P -trend=0.01), and for live birth it was 0.32 (0.14-0.71; P -trend = 0.01). These associations were significantly modified by women's age (P -interaction <0.01 for both outcomes). MedDietScore was positively related to clinical pregnancy and live birth among women <35 years old ($P \leq 0.01$) but not among women ≥ 35 years. Among women <35 years, a beneficial 5-point increase in the MedDietScore was associated with ~2.7 times higher likelihood of achieving clinical pregnancy and live birth.

LIMITATIONS, REASONS FOR CAUTION: Our finding cannot be generalized to the whole reproductive population nor to obese women nor to women attending infertility clinics around the world. In addition, due to the observational study design, causal inference is limited.

WIDER IMPLICATIONS OF THE FINDINGS:

The results suggest that diet modifications and greater compliance to the Mediterranean diet may help increase the chances of a successful pregnancy and delivering a live baby for women undergoing IVF treatment.

Contraceptives and CA

Am J Epidemiol. 2018 Jan 31. doi: 10.1093/aje/kwx388.

Oral Contraceptive Use and Risks of Cancer in the NIH-AARP Diet and Health Study.

Michels KA¹, Brinton LA¹, Pfeiffer RM¹, Trabert B¹.

Although use of oral contraceptives (OC) is common, their influence on carcinogenesis is not fully understood. We used Cox proportional hazards models to examine OC use (never/<1 year (reference), 1-4, 5-9, 10+ years) and development of incident cancers across body sites within the same base population: women in the prospective NIH-AARP Diet and Health Study (enrolled 1995-1996, followed until 2011). Adjustment for confounding varied by outcome; all models accounted for age, race, body mass index, and smoking status and included $\geq 100,000$ women. Any OC use conferred a 3% reduction in the risk for any cancer (hazard ratio = 0.97, 95% confidence interval: 0.95, 0.99). Expected risk reductions that strengthened with duration of use were identified for ovarian and endometrial cancers and were suggested for kidney cancer (P-trends < 0.05).

We noted reduced risk for non-Hodgkin lymphoma (hazard ratio = 0.79, confidence interval: 0.64, 0.97) with 10+ years of use. We observed a 37% reduced risk for bladder cancer and 46% increased risk for pancreatic cancer among long-term users who were ≤ 60 at baseline. OC use did not influence risks for most other cancers evaluated. Given the high prevalence of use and changing formulations, future studies are warranted to fully understand the chemopreventive effects of these medications.

C section

Long-term risks and benefits associated with cesarean delivery for mother, baby, and subsequent pregnancies: Systematic review and meta-analysis

PLoS Medicine — | February 06, 2018 Keag OE, et al.

This trial was pursued in order to illustrate the long-term risks and benefits of cesarean delivery for the mother, baby and subsequent pregnancies. Data exhibited a link between cesarean delivery with a reduced rate of urinary incontinence and pelvic organ prolapse when compared with vaginal delivery. However, this finding ought to be weighed against the correlation with increased risks for fertility, future pregnancy and long-term childhood outcomes. The yielded data could prove to be of value for counselling women regarding the mode of delivery.

Methods

- Herein, the primary maternal outcome was pelvic floor dysfunction, the primary baby outcome was asthma, and the primary subsequent pregnancy outcome was perinatal death.
- Data analysis was carried out of the Medline, Embase, Cochrane, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases.
- Published studies in human subjects (last search 25 May 2017) were investigated, supplemented by manual searches.
- Randomized controlled trials (RCTs) and large (more than 1,000 participants) prospective cohort studies were included for this research with greater than or equal to one-year follow-up.
- The outcomes of women delivering by cesarean delivery and by vaginal delivery were comparatively analyzed.
- Two assessors screened 30,327 abstracts.
- Using the Scottish Intercollegiate Guideline Network (SIGN) Methodology Checklist and the Risk of Bias Assessment tool for Non-Randomized Studies, grading of studies was performed for the risk of bias by two assessors.
- Data accumulation was conducted in fixed effects meta-analyses or in random effects models when significant heterogeneity was present ($I^2 \geq 40\%$).

Results

- Researchers included 1 RCT and 79 cohort studies (all from high income countries) comprising of 29,928,274 candidates.
- Compared to vaginal delivery, a correlation was determined between cesarean delivery with a decreased risk of urinary incontinence, odds ratio (OR) 0.56 (95% CI 0.47 to 0.66; n = 58,900; 8 studies) and pelvic organ prolapse (OR 0.29, 0.17 to 0.51; n = 39,208; 2 studies).
- An increased risk of asthma was found among children delivered by cesarean delivery up to the age of 12 years (OR 1.21, 1.11 to 1.32; n = 887,960; 13 studies) and obesity up to the age of 5 years (OR 1.59, 1.33 to 1.90; n = 64,113; 6 studies).
- A connection was revealed between pregnancy after cesarean delivery with increased risk of miscarriage (OR 1.17, 1.03 to 1.32; n = 151,412; 4 studies) and stillbirth (OR 1.27, 1.15 to 1.40; n = 703,562; 8 studies).
- However, this was not noted with perinatal mortality (OR 1.11, 0.89 to 1.39; n = 91,429; 2 studies).
- Pregnancy following cesarean delivery exhibited a correlation with an increased risk of placenta previa (OR 1.74, 1.62 to 1.87; n = 7,101,692; 10 studies), placenta accreta (OR 2.95, 1.32 to 6.60; n = 705,108; 3 studies), and placental abruption (OR 1.38, 1.27 to 1.49; n = 5,667,160; 6 studies).

Fetal anesthesia

Arch Gynecol Obstet. 2018 Jan 12. doi: 10.1007/s00404-017-4641-0.

Hypotension due to spinal anesthesia influences fetal circulation in primary caesarean sections.

Lato K¹, Bekes I¹, Widschwendter P², Friedl TWP¹, Janni W¹, Reister F¹, Froeba G³, Friebe-Hoffmann U¹.

PURPOSE:

Hypotension due to spinal anesthesia is a well-known side effect in pregnant women receiving caesarean section. Little is known about its impact on fetal blood circulation.

METHODS:

40 women with uncomplicated singleton term pregnancies prepared for caesarean section were prospectively evaluated by Doppler sonography before and immediately after spinal anesthesia.

RESULTS:

In 90% of the women, blood pressure significantly decreased after spinal anesthesia and 42.5% of the patients suffered from severe hypotension. We found a significant negative correlation between maternal blood pressure change and the resistant index (RI) of the umbilical artery ($r_s = -0.376$, $p = 0.017$) and a significant positive correlation between maternal blood pressure and fetal middle cerebral artery.

CONCLUSION:

Healthy fetuses seem to compensate well in situations with decreased uteroplacental blood flow due to maternal hypotension measured by means of RI changes in the fetal umbilical and middle cerebral artery. This raises the question if growth-restricted and/or preterm fetuses are able to compensate similarly or if general anesthesia would be a method of choice.

8. VISCERA

Migraine and CV disease

Research

Migraine and risk of cardiovascular diseases: Danish population based matched cohort study

BMJ 2018; 360 doi: <https://doi.org/10.1136/bmj.k96> (Published 31 January 2018) Cite this as: *BMJ* 2018;360:k96

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Objective To examine the risks of myocardial infarction, stroke (ischaemic and haemorrhagic), peripheral artery disease, venous thromboembolism, atrial fibrillation or atrial flutter, and heart failure in patients with migraine and in a general population comparison cohort.

Design Nationwide, population based cohort study.

Setting All Danish hospitals and hospital outpatient clinics from 1995 to 2013.

Participants 51 032 patients with migraine and 510 320 people from the general population matched on age, sex, and calendar year.

Main outcome measures Comorbidity adjusted hazard ratios of cardiovascular outcomes based on Cox regression analysis.

Results Higher absolute risks were observed among patients with incident migraine than in the general population across most outcomes and follow-up periods. After 19 years of follow-up, the cumulative incidences per 1000 people for the migraine cohort compared with the general population were 25 v 17 for myocardial infarction, 45 v 25 for ischaemic stroke, 11 v 6 for haemorrhagic stroke, 13 v 11 for peripheral artery disease, 27 v 18 for venous thromboembolism, 47 v 34 for atrial fibrillation or atrial flutter, and 19 v 18 for heart failure. Correspondingly, migraine was positively associated with myocardial infarction (adjusted hazard ratio 1.49, 95% confidence interval 1.36 to 1.64), ischaemic stroke (2.26, 2.11 to 2.41), and haemorrhagic stroke (1.94, 1.68 to 2.23), as well as venous thromboembolism (1.59, 1.45 to 1.74) and atrial fibrillation or atrial flutter (1.25, 1.16 to 1.36). No meaningful association was found with peripheral artery disease (adjusted hazard ratio 1.12, 0.96 to 1.30) or heart failure (1.04, 0.93 to 1.16). The associations, particularly for stroke outcomes, were stronger during the short term (0-1 years) after diagnosis than the long term (up to 19 years), in patients with aura than in those without aura, and in women than in men. In a subcohort of patients, the associations persisted after additional multivariable adjustment for body mass index and smoking.

Conclusions Migraine was associated with increased risks of myocardial infarction, ischaemic stroke, haemorrhagic stroke, venous thromboembolism, and atrial fibrillation or atrial flutter. Migraine may be an important risk factor for most cardiovascular diseases.

Acupunctures helps constipation

Neurogastroenterol Motil. 2018 Feb 2. doi: 10.1111/nmo.13307.

Acupuncture for patients with chronic functional constipation: A randomized controlled trial.

Zheng H¹, Liu ZS², Zhang W³, Chen M⁴, Zhong F³, Jing XH⁵, Rong PJ⁵, Zhu WZ², Wang FC⁶, Liu ZB⁷, Tang CZ⁸, Wang SJ⁹, Zhou MQ¹⁰, Li Y², Zhu B⁵.

BACKGROUND:

Acupuncture is used to treat chronic functional constipation (CFC) in China, despite limited evidence. We aim to assess the effectiveness and safety of acupuncture in managing CFC.

METHODS:

A multicenter randomized controlled trial was performed involving 684 patients with CFC; the patients were randomly allocated to receive He acupuncture (n = 172), Shu-mu acupuncture (n = 171), He-shu-mu acupuncture (n = 171), or oral administration of mosapride (n = 170). Sixteen sessions of acupuncture were given in the treatment duration of 4 weeks. The primary outcome was the change in spontaneous bowel movements (SBMs) at week 4 (at the end of treatment) compared to baseline. The secondary outcomes included stool consistency (Bristol scale), the degree of straining during defecation, and adverse events.

KEY RESULTS:

The SBMs increased in all the four groups at week 4, and the magnitude of increase was equivalent in the four groups (He acupuncture, 2.7 [95% CI, 2.3-3.1]; Shu-mu acupuncture, 2.7 [95% CI, 2.3-3.0]; He-shu-mu acupuncture, 2.2 [95% CI, 1.9-2.5]; and mosapride, 2.4 [95% CI, 2.0-2.9]; P = .226). However, the change in SBMs at week 8 was significantly smaller in mosapride group (1.4 [95% CI, 1.0-1.8]) than the three acupuncture groups (2.4 [95% CI, 2.1-2.7], 2.3 [95% CI, 1.9-2.7], 2.1 [95% CI, 1.7-2.5] in He, Shu-mu, and He-shu-mu group, respectively, P = .005).

CONCLUSIONS & INTERFERENCES:

The three acupuncture treatments were as effective as mosapride in improving stool frequency and stool consistency in CFC, but the magnitude of the treatment effect is unknown due to the lack of sham acupuncture control.

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KEYWORDS:

acupuncture; functional constipation; randomized controlled trial

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Gallstones

J Gastroenterol Hepatol. 2018 Feb 2. doi: 10.1111/jgh.14113.

The Characteristics of Small Intestinal Bacterial Overgrowth in Patients with Gallstone Diseases.

Kim DB¹, Paik CN¹, Song DS¹, Kim YJ¹, Lee JM¹.

BACKGROUND AND AIM:

Small intestinal bacterial overgrowth (SIBO) might be prevalent in gallstone disease, including cases involving cholecystectomy and gallstones. The study aimed to investigate the prevalence and characteristics of SIBO in patients with gallstone disease.

METHODS:

This prospective study evaluated 265 patients for gallstone disease (200, gallstones; 65, cholecystectomy) and 39 healthy controls. Laboratory data, abdominal ultrasonography, and glucose breath test (GBT) with bowel symptom questionnaire were performed.

RESULTS:

GBT positivity (+) in patients with gallstone disease (36.6%) was significantly higher than that in controls (20.5%). GBT+ in the gallstone group (40.5%) was significantly higher than that in the control or cholecystectomy group (24.6%). The number of patients with gallstone, tend to be higher in the GBT (H₂) +, (CH₄) +, and (mixed)+ groups (56 [28.0%], 11 [5.5%], and 14 [7.00%]), respectively. Gallbladder disease was independently associated with fatty liver, metabolic syndrome and SIBO. Of 97 GBT+ patients, 70 (72.1%), 12 (12.4%) and 15 (15.5%) were in the GBT (H₂) +, (CH₄) +, (mixed)+ groups, respectively. GBT (CH₄) +, or GBT (mixed)+ were significantly associated with the gallstone group compared with the cholecystectomy group. The GBT (mixed)+ group had higher total symptom scores than the GBT- group for hard stool and urgency tendency, or the GBT (H₂) + group in hard stool and loose stool tendency. Gallstone was the only independent factor for SIBO in patients with gallstone diseases **CONCLUSIONS:** SIBO is common among patients with gallstone. Especially, CH₄ or mixed-type SIBO seems to be prevalent and to worsen intestinal symptoms.

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KEYWORDS:

bacterial overgrowth; breath test; cholecystectomy; gallstone

PMID: 29392773 DOI: 10.1111/jgh.14113

IBS in elderly

Phenotype and natural history of elderly onset inflammatory bowel disease: A multicentre, case-control study

Alimentary Pharmacology and Therapeutics — | February 02, 2018

Mañosa M, et al.

In patients with elderly onset inflammatory bowel disease (IBD), the researchers evaluated phenotypic characteristics and the use of therapeutic resources. Findings revealed specific characteristics of elderly-onset IBD. These were managed differently, with a lower use of immunosuppressants and a higher rate of surgery in ulcerative colitis (UC).

Methods

- From the IBD databases, researchers identified all those patients diagnosed with IBD over the age of 60 years since 2000 who were followed-up for >12 months, for this case-control study.
- They performed comparison of elderly onset cases with IBD patients aged 18 to 40 years at diagnosis, matched by year of diagnosis, gender and type of IBD (adult-onset).

Results

- Researchers included 1,374 elderly onset and 1,374 adult-onset cases (62% ulcerative colitis (UC), 38% Crohn's disease (CD)).
- A lower proportion of extensive disease was shown by elderly onset UC patients (33% vs 39%; $P < 0.0001$).
- Elderly onset UC cases showed an increased rate of stenosing pattern (24% vs 13%; $P < 0.0001$) and exclusive colonic location (28% vs 16%; $P < 0.0001$); however they showed significantly less frequent penetrating pattern (12% vs 19%; $P < 0.0001$).
- In terms of the therapeutic resources use, a significantly lower use of corticosteroids ($P < 0.0001$), immunosuppressants ($P < 0.0001$) and anti-TNFs agents ($P < 0.0001$) was observed in elderly onset cases.
- In terms of surgery, a significantly higher surgery rate was observed among elderly onset UC cases (8.3% vs 5.1%; $P < 0.009$).
- Finally, a higher rate of hospitalisations (66% vs 49%; $P < 0.0001$) and neoplasms (14% vs 0.5%; $P < 0.0001$) were evident among elderly onset cases.

12 B. CERVICAL SURGERIES**OP vs IP fusions**

Clin Spine Surg. 2018 Feb;31(1):43-47. doi: 10.1097/BSD.0000000000000499.

Comparing Short-term Complications of Inpatient Versus Outpatient Single-level Anterior Cervical Discectomy and Fusion: An Analysis of 6940 Patients Using the ACS-NSQIP Database.

Khanna R¹, Kim RB¹, Lam SK², Cybulski GR¹, Smith ZA¹, Dahdaleh NS¹.

STUDY DESIGN:

Multicenter propensity score-adjusted retrospective cohort study.

OBJECTIVE:

To determine baseline 30-day complication rates for anterior cervical discectomy and fusion (ACDF) and compare clinical complications for patients undergoing single-level ACDFs between inpatient and outpatient settings.

SUMMARY OF BACKGROUND DATA:

ACDF remains the most common procedure in the treatment of a variety of cervical disc pathologies, making it a focus of quality improvement initiatives. Outpatient single-level ACDFs are becoming more common and offer advantages including reducing nosocomial infections and costs, as well as improved patient satisfaction.

MATERIALS AND METHODS:

The 2011-2013 NSQIP datasets were queried to identify all patients who underwent single-level ACDF procedures using current procedural terminology codes. Outpatient and inpatient cohorts were matched 1:1 using propensity score analysis to assess short-term outcomes. The outcomes assessed included 30-day medical and surgical complications, reoperation, readmission, and mortality.

RESULTS:

In total, 6940 patients underwent a single-level ACDF with an overall complication rate of 4.2%. A total of 5162 patients (74.4%) had an inpatient hospital stay after surgery, whereas 1778 patients (25.6%) had outpatient surgery. After matching based on preoperative and operative characteristics to account for potential confounders, the overall complication rate was higher in the inpatient arm compared with the outpatient arm (2.5% vs. 1.2%; P=0.003). The 30-day readmission rate was also higher but not significant in the inpatient group than the outpatient group (2.2% vs. 1.8%; P=0.355). Mortality was the same with 0.1% in both groups (P=0.564).

CONCLUSIONS:

Patients undergoing outpatient single-level ACDF had a lower 30-day complication rates than those undergoing it in the inpatient setting. Outpatient surgery for single-level ACDF is safe and a favorable option for suitable patients.

Risk factors**Risk factors for non-fusion segment disease after anterior cervical spondylosis surgery: a retrospective study with long-term follow-up of 171 patients**

- Ziqiang Wang[†], Liangliang Zhou[†], Bin Lin, Keran Song, Qinghe Niu, Dongfeng RenEmail author and Jianguang Tang

Journal of Orthopaedic Surgery and Research 2018**13**:27 <https://doi.org/10.1186/s13018-018-0717-1>

Background

The purpose of this study was to investigate the incidence and causes of non-fusion segment disease (NFSD), both adjacent and non-adjacent to a fused segment, after anterior cervical arthrodesis.

Methods

This is a single-center study. Between January 1998 and January 2011, two surgeons' 171 patients who had an anterior cervical decompression and fusion were followed clinically for more than 5 years. The correlation between the incidence of symptomatic non-fusion segment disease and the following clinical parameters (age at operation, fusion levels,) and radiological parameters (number of patients who had a plate, anterior cervical decompression and fusion (ACDF) or corpectomies, preoperative and postoperative cervical spine alignment, Pavlov's ratio at the C5 level, and preoperative existence of a non-fusion segment degeneration on magnetic resonance imaging) was evaluated.

Results

Of the 171 patients reviewed, 16 patients had non-fusion segment disease (9.36%), of which 12 had adjacent segment disease and 4 had non-adjacent segment disease. Postoperative cervical lordosis in the non-fusion segment disease group was significantly smaller than that of the disease-free group ($P < 0.001$). Fusion levels in the NFSD group were 1.69 whereas 2.26 in disease-free group ($P = 0.005$). The incidences of disc degeneration in unfused segments was more severe in the NFSD group than in the disease-free group ($P = 0.004$). The results of binary logistic regression showed that the major factor affecting NFSD is postoperative cervical lordosis ($P = 0.000$) followed by disc degeneration ($P = 0.024$). The other parameters did not show a statistically significant difference.

Conclusions

The incidence of symptomatic non-fusion segment disease after anterior cervical arthrodesis has multifactorial causes. Postoperative cervical lordosis and disc degeneration in non-fusion segments were major factors in the incidence of NFSD.

13 A. CRANIUM**Trigeminal neuralgia**

Neurosurgery. 2008 Jul;63(1 Suppl 1):ONS147-53; discussion ONS153-5. doi: 10.1227/01.neu.0000335029.85402.89.

Computed tomography-guided percutaneous trigeminal tractotomy-nucleotomy.

Kanpolat Y¹, Kahilogullari G, Ugur HC, Elhan AH.

OBJECTIVE:

The destruction of the descending trigeminal tractus in the medulla is known as trigeminal tractotomy (TR), whereas the lesioning of the nucleus caudalis is known as trigeminal nucleotomy (NC). Trigeminal TR and/or NC procedures can be used in a large group of pain syndromes, such as glossopharyngeal, vagal, and geniculate neuralgias, atypical facial pain, craniofacial cancer pain, postherpetic neuralgias, and atypical forms of trigeminal neuralgia.

METHODS:

In this study, anatomic and technical details of the procedure and the experience gained from 65 patients over the course of 20 years are discussed. Patients' pain scores and Karnofsky Performance Scale scores were evaluated pre- and postoperatively (postoperative Day 1).

RESULTS:

The best results were obtained in the second-largest group (vagoglossopharyngeal neuralgia, n = 17) and in geniculate neuralgia (n = 4). Patients with atypical facial pain (n = 21; 13 women, eight men) accounted for the largest group to undergo computed tomography-guided TR-NC surgery; pain relief was achieved in 19 of these patients. In the third-largest group (craniofacial and oral cancer pain, n = 13), 11 of 13 patients were successfully treated with TR-NC. Four of five patients with failed trigeminal neuralgia were also effectively treated with TR-NC.

CONCLUSION:

We propose that computed tomography-guided TR-NC provides direct visualization of the target-electrode relation and can be considered a first-step procedure in patient management. In view of its high efficacy, low complication rate, and minimal invasiveness, computed tomography-guided trigeminal TR-NC is a safe and effective procedure in the treatment of intractable facial pain syndromes.

PMID: 18728592 DOI: 10.1227/01.neu.0000335029.85402.89

13 B. TMJ/ORAL**Periodontal disease and heart problems**

ORIGINAL CONTRIBUTION

Periodontal Disease, Regular Dental Care Use, and Incident Ischemic Stroke

Souvik Sen, Lauren D. Giamberardino, Kevin Moss, Thiago Morelli, Wayne D. Rosamond, Rebecca F. Gottesman, James Beck, Steven Offenbacher
<https://doi.org/10.1161/STROKEAHA.117.018990>

Background and Purpose—Periodontal disease is independently associated with cardiovascular disease. Identification of periodontal disease as a risk factor for incident ischemic stroke raises the possibility that regular dental care utilization may reduce the stroke risk.

Methods—In the ARIC (Atherosclerosis Risk in Communities) study, pattern of dental visits were classified as regular or episodic dental care users. In the ancillary dental ARIC study, selected subjects from ARIC underwent fullmouth periodontal measurements collected at 6 sites per tooth and classified into 7 periodontal profile classes (PPCs).

Results—In the ARIC study 10 362 stroke-free participants, 584 participants had incident ischemic strokes over a 15-year period. In the dental ARIC study, 6736 dentate subjects were assessed for periodontal disease status using PPC with a total of 299 incident ischemic strokes over the 15-year period. The 7 levels of PPC showed a trend toward an increased stroke risk (χ^2 trend $P < 0.0001$); the incidence rate for ischemic stroke/1000-person years was 1.29 for PPC-A (health), 2.82 for PPC-B, 4.80 for PPC-C, 3.81 for PPC-D, 3.50 for PPC-E, 4.78 for PPC-F, and 5.03 for PPC-G (severe periodontal disease). Periodontal disease was significantly associated with cardioembolic (hazard ratio, 2.6; 95% confidence interval, 1.2–5.6) and thrombotic (hazard ratio, 2.2; 95% confidence interval, 1.3–3.8) stroke subtypes. Regular dental care utilization was associated with lower adjusted stroke risk (hazard ratio, 0.77; 95% confidence interval, 0.63–0.94).

Conclusions—We confirm an independent association between periodontal disease and incident stroke risk, particularly cardioembolic and thrombotic stroke subtype. Further, we report that regular dental care utilization may lower this risk for stroke.

13 C. AIRWAYS/SWALLOWING/SPEECH**Gluten free diet helps sleep apnea****Gluten-free diet may improve obstructive sleep apnea-related symptoms in children with celiac disease**

- Anat Yerushalmy-Feler[†], Riva Tauman[†], Ari Derowe, Eran Averbuch, Amir Ben-Tov, Yael Weintraub, Dror Weiner, Achiya Amir, Hadar Moran-Lev and Shlomi Cohen

<https://doi.org/10.1186/s12887-018-1039-5>

Abstract**Background**

Enlarged tonsils and adenoids are the major etiology of obstructive sleep apnea (OSA) in children. Lymphatic hyperplasia is common to both OSA and celiac disease. We aimed to investigate the effect of a gluten-free diet on OSA symptoms in children with celiac disease.

Methods

Children with celiac disease aged 2–18 years were prospectively recruited before the initiation of a gluten-free diet. Children with negative celiac serology who underwent gastrointestinal endoscopies for other indications served as controls. All participants completed a validated OSA-related symptoms questionnaire and the pediatric sleep questionnaire (PSQ) at baseline and 6 months later.

Results

Thirty-four children with celiac disease (mean age 6.6 ± 3.5 years) and 24 controls (mean age 7.3 ± 4.6 years, $P=0.5$) were recruited. There were no significant differences in gender, body mass index or season at recruitment between the two groups. The rate of positive PSQ scores was higher (more OSA-related symptoms) in the control group compared to the celiac group, both at recruitment and at the 6-month follow-up (33.3% vs. 11.8%, $P=0.046$, and 16.7% vs. 0, $P=0.014$, respectively). PSQ scores improved significantly in both groups at the 6-month follow-up ($P<0.001$ for both). Improvement was significantly higher in the celiac group compared to controls (0.1 ± 0.09 vs. 0.06 ± 0.06 , respectively, $P=0.04$).

Conclusions

Children with celiac disease had fewer OSA-related symptoms than controls, but the degree of improvement following the initiation of a gluten-free diet was significantly higher. These findings suggest that a gluten-free diet may improve OSA-related symptoms in children with celiac disease.

MS and sleep

Sleep disturbance and cognitive dysfunction in multiple sclerosis: A systematic review

Current Neurology and Neuroscience Reports — | January 31, 2018

Hughes AJ, et al.

Researchers performed a systematic review to summarize recent research on the association between sleep disturbance and cognitive dysfunction in MS. In addition, they discussed assessment methodology, domain-specific associations between sleep disturbance and cognitive dysfunction, and implications for future research and treatment. As per findings, for predicting future cognitive decline in MS, sleep disturbance could provide help. Results thereby underscore the significance of integrating sleep assessment into routine MS care. For improving cognitive dysfunction in MS, interventions aimed treating sleep disturbance could offer promise.

Sleep and system atrophy

Sleep and Breathing pp 1–7|

Impact of sleep-related breathing disorder on motor and non-motor symptoms in multiple system atrophy

- Bei Cao Qian-Qian Wei Ruwei Ou Bi Zhao Tao Hu Yongping Chen Jing Yang Fei Lei iangdong Tang Hui-Fang Shang

Introduction

Although several studies suggested that sleep-related breathing disorder (SRBD) is a frequent symptom of multiple system atrophy (MSA), whether SRBD has influence on the motor and non-motor symptoms of MSA is unknown.

Methods

A total of 40 MSA patients and 40 healthy volunteers (HVs) underwent video-polysomnography (PSG) in the current study. All the MSA individuals were assessed using the Epworth Sleepiness Scale (ESS), Unified Multiple-System Atrophy Rating Scale (UMSARS), Hamilton Depression Scale (HAMD), Hamilton Anxiety Scale, Frontal assessment battery (FAB), Parkinson's Disease Questionnaire-39 (PDQ-39), and the Montreal Cognitive Assessment (MoCA).

Results

We found apnea-hypopnea index (AHI) of the MSA patients recorded by PSG was 16.4 ± 20.2 . SRBD was found in 65% of the MSA patients (26/40), which was significantly higher than HVs (8/40, 20%) ($p=0.0001$). Compared to the MSA patients without SRBD, MSA individuals with SRBD showed higher total UMSARS, UMSARS-II, FAB, and HAMD scores, more frequent occurrence of excessive daytime sleepiness, hypopneas, longer mean times for hypopneas, and obstructive sleep apnea (OSA), as well as longer time for OSA. This study suggested that SRBD is frequently seen in MSA patients.

Conclusion

MSA individuals with SRBD are prone to be severe motor deficits, depression, frontal lobe dysfunction, and excessive daytime sleepiness.

14. HEADACHES

Botox safety

The Journal of Headache and Pain December 2018, 19:13|

Long-term study of the efficacy and safety of OnabotulinumtoxinA for the prevention of chronic migraine: COMPEL study

- Andrew M. Blumenfeld Richard J. Stark arshall C. Freeman Amelia Orejudos Aubrey Manack Adams

Background

OnabotulinumtoxinA is approved for the prevention of headache in those with chronic migraine (CM); however, more clinical data on the risk-benefit profile for treatment beyond one year is desirable.

Methods

The Chronic Migraine OnabotulinumtoxinA Prolonged Efficacy open Label (COMPEL) Study (ClinicalTrials.gov, NCT01516892) is an international, multicenter, open-label long-term prospective study. Adults with CM received 155 U of onabotulinumtoxinA (31 sites in a fixed-site, fixed-dose paradigm across 7 head/neck muscles) every 12 weeks (± 7 days) for 9 treatment cycles (108 weeks). The primary outcome was headache day reductions at 108 weeks; secondary outcomes were headache day reductions at 60 weeks and change in the 6-item Headache Impact Test (HIT-6) score. Safety and tolerability were assessed by reviewing the frequency and nature of adverse events (AEs). AEs were determined at each visit through patient self-report, general non-directed and, for specific AEs, directed questioning, and physical examination. Subgroup analyses for safety and efficacy included, but were not limited to, patients with/without concomitant oral preventive treatment and acute medication overuse at baseline.

Results

Enrolled patients ($N=716$) were 18–73 years old and most were female ($n=607$, 84.8%). At baseline, patients reported an average 22.0 (SD=4.8) headache days per month. 52.1% of patients ($n=373$) completed the study. By 60 and 108 weeks, a significant reduction in headache days (-9.2 days and -10.7 days, respectively, $P<0.0001$) was observed. Significant improvements ($P<0.0001$) in HIT-6 scores (-7.1 point change at week 108) were also demonstrated. 131 patients (18.3%) reported ≥ 1 treatment-emergent adverse events; most frequently reported was neck pain ($n=29$, 4.1%). One patient reported a serious treatment-related adverse event (rash). No deaths were reported.

Conclusions

The COMPEL Study provides additional clinical evidence for the consistency of the efficacy and for the long-term safety and tolerability of onabotulinumtoxinA for the prevention of headache in those with CM who have been treated with onabotulinumtoxinA every 12 weeks over 2 years (9 treatments) with the fixed-site, fixed-dose injection paradigm.

16. CONCUSSIONS

Duel tasks

RESEARCH REPORT

Dual-Task Assessment Protocols in Concussion Assessment: A Systematic Literature Review

Authors: Michelle Kleiner, PT, MCIScPT¹, Lynne Wong, PT, MCIScPT¹, Alexandra Dubé, PT, MCIScPT¹, Katie Wnuk, PT, MCIScPT¹, Susan W. Hunter, PT, PhD¹, Laura J. Graham, PT, PhD¹

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Published: *Journal of Orthopaedic & Sports Physical Therapy*, 2017 **Volume:**48 **Issue:**2 **Pages:**87–103 **DOI:**10.2519/jospt.2018.7432

Abstract

Study Design

Systematic review.

Background

When assessed in isolation, balance and neurocognitive testing may not be sufficiently responsive to capture changes that occur with concussion. Normal daily activities require simultaneous cognitive and physical demands. Therefore, a dual-task assessment paradigm should be considered to identify performance deficits.

Objectives

To evaluate the literature and to identify dual-task testing protocols associated with changes in gait after concussion.

Methods

A systematic review of articles of individuals with concussion who underwent dual-task testing with a combination of motor and cognitive tasks was conducted. The AMED, CINAHL, Embase, PsycINFO, PubMed, Scopus, SPORTDiscus, and Web of Science databases and gray literature were searched from inception to January 29, 2017. Title and abstract, full-text, and quality review and data abstraction were performed by 2 independent reviewers.

Results

Twenty-four articles met the inclusion criteria. Eleven articles reported decreased gait velocity and increased medial-lateral displacement for individuals with concussion during dual-task conditions. Overall, included articles were of poor to moderate methodological quality. Fifteen articles used the same participants and data sets, creating a threat to validity and limiting the ability to make conclusions.

Conclusion

A deterioration in gait performance during dual-task testing is present among people with concussion. Specific recommendations for the use of a dual-task protocol to assess individuals with suspected concussion injury in a clinical setting have yet to be determined. *J Orthop Sports Phys Ther* 2018;48(2):87–103. *Epub* 7 Nov 2017. *doi:*10.2519/jospt.2018.7432

20 A. ROTATOR CUFF**Results**

Knee Surgery, Sports Traumatology, Arthroscopy pp 1–8|

Clinical and anatomic results of rotator cuff repair at 10 years depend on tear type

- Charles Agout Julien Berhouet Yves Bouju Arnaud Godenèche Philippe Collin Jean-François Kempf Luc Favard

Purpose

Although good short-term and mid-term outcomes are reported for rotator cuff repair, few studies have investigated long-term outcome with clinical and MRI evaluation. The hypothesis was that 10 years following repair of rotator cuff tear, the clinical and anatomic results depend on the extension of the tear.

Methods

The records of all 965 patients who underwent repair of rotator cuff tears in 2003 were retrieved. The patients were reviewed in 2014 for evaluation at a minimum follow-up of 10 years. A total of 511 patients were evaluated clinically, of whom 397 were also evaluated using MRI. There were 289 isolated supraspinatus tears (SS), 94 tears with posterior extension (P), 92 with anterior extension (A) and 36 with anteroposterior (AP) extension.

Results

The Constant score had significantly improved from 53.8 ± 14.7 preoperatively to 77.7 ± 12.1 ($P < 0.0001$) at 10 years, with no significant difference between the four groups. The rate of retear (Sugaya IV, V) was lower in the SS group (19%) and higher in the P (32%) and AP groups (31%). At review, infraspinatus fatty degeneration was significantly greater (Fuchs > 2) in the P ($P < 0.001$) and AP ($P < 0.001$) groups and subscapularis fatty degeneration was significantly greater (Fuchs > 2) in the A ($P < 0.001$) and AP ($P < 0.001$) groups. The rate of osteoarthritis (Samilson > 2) was significantly higher at 11% ($P = 0.001$) in the A group. The failure rate was significantly lower ($P = 0.044$) in the SS group (25%) than the massive rotator cuff tear groups (A, P and AP groups) (35%). Complications occurred in 51 shoulders (10%) and repeat surgery was required in 62 shoulders (12%), with no difference between the four groups.

Conclusions

The long follow-up period of this study, large series of patients and MRI evaluation of tendon repair allowed us to demonstrate that 10 years following rotator cuff tear repair, between 68 and 81% of tendons had healed. These findings are of value in predicting response to surgical treatment. Tears with posterior extension had a higher risk of retear. However, surgical repair appeared to give a good functional outcome whatever the type of tear, despite the overall rate of complications and repeat surgery.

27. HIP**Clicky hip in infants**

Bone Joint J. 2017 Nov;99-B(11):1533-1536. doi: 10.1302/0301-620X.99B11.BJJ-2017-0416.R1.

Clicky hip alone is not a true risk factor for developmental dysplasia of the hip.

Nie K¹, Rymaruk S¹, Paton RW².

AIMS:

A clicky hip is a common referral for clinical and sonographic screening for developmental dysplasia of the hip (DDH). There is controversy regarding whether it represents a true risk factor for pathological DDH. Therefore a 20-year prospective, longitudinal, observational study was undertaken to assess the relationship between the presence of a neonatal clicky hip and pathological DDH.

PATIENTS AND METHODS:

A total of 362 infants from 1997 to 2016 were referred with clicky hips to our 'one-stop' paediatric hip screening clinic. Hips were assessed clinically for instability and by ultrasound imaging using a simplified Graf/Harcke classification. Dislocated or dislocatable hips were classified as Graf Type IV hips.

RESULTS:

The mean age at presentation was 13.8 weeks (12.8 to 14.7). In all 351 out of 362 children (97.0%) had Graf Type I hips (normal) that required no treatment. Nine children (2.5%) had Graf Type II hips but all resolved to Graf Type I hips on follow-up scans. One child (0.3%) had Graf Type III hip dysplasia and one child (0.3%) had an irreducible hip dislocation. The two pathological hips were associated with unilateral limited hip abduction. Mean referrals increased from 12.9 to 23.3 each year ($p = 0.002$) from the first decade of the study to the second, driven by increasing primary care referrals (5.5 *versus* 16.7 per year, $p < 0.001$).

CONCLUSION:

Most clicky hips required no treatment other than reassurance to parents. Clicky hips with a normal hip examination should be considered a variant of normal childhood and not a risk factor for DDH. However, an abnormal hip examination including unilateral limited hip abduction should prompt urgent further investigations. Cite this article: *Bone Joint J* 2017;99-B:1533-6.

34. PATELLA

Meniscus and OA

Relation of meniscus pathology to prevalence and worsening of patellofemoral joint osteoarthritis: The multicenter osteoarthritis study

Osteoarthritis and Cartilage — | February 09, 2018
Hart HF, et al.

This study aimed to assess the association between the meniscal damage and magnetic resonance imaging (MRI) features of compartment-specific patellofemoral joint (PFJ) osteoarthritis (OA) at baseline and 2 years later. Results illustrated the relationship between meniscal tear and extrusion with an increased risk of medial and lateral PFJ OA and more severe meniscal pathology was noted to be associated with worsening of PFJ OA 2 years later. It was discovered that lateral meniscal pathology was more detrimental to the lateral PFJ.

35. KNEE/TOTAL**Downhill gait training****A Novel Downhill Gait-Training Program Following a Total Knee Arthroplasty: A Case Report Highlighting the Impacts of Self-selected Speed on Gait Symmetry**

Authors: Cody Blue, PTA1, Sara Coomes, MPT2, Yuri Yoshida, PT, PhD3

Published: Journal of Orthopaedic & Sports Physical Therapy,

2017 Volume:48 Issue:2 Pages:104–110 DOI:10.2519/jospt.2018.7374

Bottom of Form

Study Design

Case report.

Background

Walking plays an essential role in activities of daily living and has varied health benefits. Studies report that gait speed and symmetry are impacted in individuals following total knee arthroplasty (TKA). Unfortunately, abnormal gait patterns persist in individuals after TKA. Downhill walking may provide a simple and feasible exercise regimen to improve gait patterns. The purpose of this case report was to describe the application of a downhill treadmill training program and the subsequent changes in gait patterns in an individual following a unilateral TKA.

Case Description

The participant was a 59-year-old woman following a right TKA. Downhill gait training was initiated 1 month post TKA and completed for 5 weeks. Outcomes were assessed using questionnaires, mobility tests, strength of quadriceps, and gait patterns. The treadmill speed was determined by the participant's self-selected gait speed on a level surface.

Outcomes

The participant's eccentric quadriceps strength in the operated limb significantly increased after the gait training. Her physical function recovered to a level similar to that of previous reports. Postintervention gait analysis was conducted at 2 self-selected speeds, due to an increase in the participant's self-selected gait speed between sessions. The participant demonstrated a more symmetrical gait pattern when walking slower and a more asymmetrical gait pattern at the faster speed.

Discussion

After completion of downhill gait training in conjunction with therapeutic exercises, the participant showed an increase in quadriceps strength and improved physical function. This case report describes the utilization and potential feasibility of downhill gait training in conjunction with outpatient physical therapy for an individual following unilateral TKA.

Level of Evidence

Therapy, level 5. *J Orthop Sports Phys Ther* 2018;48(2):104–110. Epub 7 Nov 2017.

doi:10.2519/jospt.2018.7374

45 A. MANUAL THERAPY LUMBAR & GENERAL**Helps LBP**

Spine J. 2018 Jan 22. pii: S1529-9430(18)30016-0. doi: 10.1016/j.spinee.2018.01.013

Manipulation and mobilization for treating chronic low back pain: a systematic review and meta-analysis.

Coulter ID¹, Crawford C², Hurwitz EL³, Vernon H⁴, Khorsan R⁵, Suttorp Booth M², Herman PM².

BACKGROUND CONTEXT: Mobilization and manipulation therapies are widely used to benefit patients with chronic low back pain. However, questions remain about their efficacy, dosing, safety, as well as how these approaches compare to other therapies.

PURPOSE: To determine the efficacy, effectiveness, and safety of various mobilization and manipulation therapies for treatment of chronic low back pain.

STUDY DESIGN/SETTING: A systematic literature review and meta-analysis.

OUTCOME MEASURES: Self-reported pain, function, health-related quality of life, adverse events.

METHODS: We identified studies by searching multiple electronic databases from January 2000 to March 2017, examining reference lists, and communicating with experts. We selected randomized controlled trials comparing manipulation and/or mobilization therapies to sham, no treatment, other active therapies, and multimodal therapeutic approaches. We assessed risk of bias using Scottish Intercollegiate Guidelines Network criteria. Where possible, we pooled data using random-effects meta-analysis. Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) was applied to determine the confidence in effect estimates. This project is funded by the National Center for Complementary and Integrative Health under Award Number U19AT007912.

RESULTS: 51 trials were included in the systematic review. Nine trials (1176 patients) provided sufficient data and were judged similar enough to be pooled for meta-analysis. The standardized mean difference for a reduction of pain was SMD= -0.28, 95% CI, -0.47 to -0.09, P=0.004; I²=57% at post-treatment; within seven trials (923 patients) the reduction in disability was SMD= -0.33, 95% CI, -0.63 to -0.03, P=0.03; I²=78% for manipulation or mobilization as compared to other active therapies. Subgroup analyses showed that manipulation significantly reduced pain and disability, compared to other active comparators including exercise and physical therapy (SMD= -0.43, 95% CI, -0.86 to 0.00; P=0.05, I²=79%), (SMD= -0.86, 95% CI, -1.27 to -0.45; P<0.0001, I²=46%). Mobilization interventions, as compared to other active comparators including exercise regimens, significantly reduced pain (SMD= -0.20, 95% CI, -0.35 to -0.04; p=0.01; I²=0%) but not disability (SMD= -0.10, 95% CI, -0.28 to 0.07; p=0.25; I²=21%). Studies comparing manipulation or mobilization to sham or no treatment were too few or too heterogeneous to allow for pooling as were studies examining relationships between dose and outcomes. Few studies assessed health-related quality of life. Twenty-six of the 51 trials were multimodal studies and narratively described.

CONCLUSIONS: There is moderate-quality evidence that manipulation and mobilization are likely to reduce pain and improve function for patients with chronic low back pain; manipulation appears to produce a larger effect than mobilization. Both therapies appear safe. Multimodal programs may be a promising option.

45 C. MANUAL THERAPY THORACIC**Mulligan to T spine helps shoulder**

The International Journal of Sports Physical Therapy | Volume 13, Number 1 | February 2018 | Page 121 **CASE SERIES**

THE UTILIZATION OF MULLIGAN CONCEPT THORACIC SUSTAINED NATURAL APOPHYSEAL GLIDES ON PATIENTS CLASSIFIED WITH SECONDARY IMPINGEMENT SYNDROME: A MULTI-SITE CASE SERIES

Dawn P. Andrews, DAT, AT, CMP¹ Kari B. Odland-Wolf, DAT, ATC² James May, DAT, ATC, CMP³ Russell Baker, PhD, DAT, AT, CMP, PRT-c®⁴ Alan Nasypany, EdD, LAT, ATC⁵

ABSTRACT

Background and Purpose: Secondary impingement syndrome (SIS) is a common complaint in the sporting population particularly among athletes engaging in overhead activities. While symptoms may be present at the shoulder with patients complaining of SIS, spinal alignment or dysfunction can influence scapular positioning and overall shoulder girdle function. As an adjunct therapy to traditional interventions for SIS, thoracic high-velocity low-amplitude (HVLA) thrusts have been utilized and correlated with patient reported decreases in pain. Mulligan Concept (MC) thoracic sustained natural apophyseal glides (SNAGs) are an emerging treatment intervention utilized to treat patients with shoulder pain and dysfunction as the evidence supporting an interdependent relationship between the thoracic spine and the shoulder is growing. The purpose of this case series was to investigate the effects of one MC thoracic SNAG treatment session on subjects classified with SIS, while utilizing a classification-based treatment protocol.

Case Descriptions: Seven subjects classified with SIS were treated utilizing a MC thoracic SNAG. The Numeric Rating Scale (NRS) was administered at initial evaluation, immediately following intervention, and at the 48-h follow-up to identify patient-reported pain during range of motion, manual strength testing, and special tests of the shoulder. Investigators collected the Shoulder Pain and Disability Index (SPADI) at initial evaluation and the 48-h follow-up to identify patient-reported dysfunction.

Outcomes: Following one MC thoracic SNAG treatment (3 sets of 10 repetitions), minimal clinically important differences (MCIDs) were reported utilizing the NRS. A decrease in pain during active shoulder abduction (ABD) was detected immediately post-treatment, and the NRS change scores for resisted external rotation (RER) and active ABD were statistically different and clinically important at the 48-h follow-up.

Discussion: Based on the results of this case series, thoracic SNAGs may influence short-term pain levels and shoulder mobility in the included subjects with SIS and support the concept of regional interdependence (RI) between the thoracic spine and glenohumeral joint. Continued exploration into the proposed benefits of the MC thoracic SNAG treatment as an adjunct therapy when treating patients complaining of SIS is warranted.

45 D. MANUAL THERAPY EXTREMITIES**Sprain ankle mobilization**

The International Journal of Sports Physical Therapy | Volume 13, Number 1 | February 2018 | Page 1

ORIGINAL RESEARCH

EFFICACY OF THE STRETCH BAND ANKLE TRACTION TECHNIQUE IN THE TREATMENT OF PEDIATRIC PATIENTS WITH ACUTE ANKLE SPRAINS: A RANDOMIZED CONTROL TRIAL

Kathryn Iammarino, DPT, SCS¹ James Marrie, PT¹ Mitchell Selhorst, DPT, OCS¹ Linda P. Lowes, PT, PhD¹

Background: Ankle injuries account for up to 40% of all sport related injuries. These injuries can result in weeks to months of missed sport or work. The PRICE (Protection, Rest, Ice, Compression, Elevation) treatment is standard care for most acute ankle sprains. Recently, early mobilization in adults has been shown to decrease time off from sport or work, and the likelihood of developing chronic instability. To date, no research has been performed assessing the effectiveness of early mobilization in pediatric patients (<18 years). **Purpose:** There were two objectives of this study: (1) to determine if early ankle joint mobilization using elastic band traction is effective and (2) assess the occurrence of adverse events with this technique in the pediatric population.

Methods: Patients with an acute ankle sprain of <7 days referred to physical therapy were randomly assigned to receive early mobilization or PRICE. Early mobilization was performed using a stretch band ankle traction technique. Both groups received a standardized rehabilitation program. Pain, edema, ankle strength using hand-held dynamometry, and Foot and Ankle Disability Index (FADI) were measured at both initial evaluation and at discharge. The number of days before return to sport and the number of treatment sessions were also variables of interest.

Results: Forty-one pediatric patients were recruited for participation (mean age 14.6 + 1.9 years). Both treatment groups had clinically significant improvements in pain, edema, strength, and FADI scores. No significant differences in outcomes were noted between treatment groups. Mean number of days for return to sport for the PRICE group was 26.33 + 7.14 and the early mobilization group was 26.63 + 14.82, the difference between groups was not significant (p= 0.607). The number of total visits for the PRICE group of 8.07 + 2.63 and the early mobilization groups of 8.5 + 1.57, was also not statistically significantly different (p= 0.762). There were no reported adverse events with early mobilization.

Conclusion: Early mobilization appears to be a safe intervention in pediatric patients with an acute ankle sprain. Early mobilization resulted in similar outcomes when compared to traditional PRICE treatment. A high drop-out rate in both treatment groups was a limitation of this randomized trial.

Level of evidence: 1b

Key words: Ankle sprain, pediatric, mobilization

48 A. STM

Self STM to LE

The International Journal of Sports Physical Therapy | Volume 13, Number 1 | February 2018 | Page 104 ORIGINAL RESEARCH

ACUTE EFFECTS OF DIFFERENT ANTERIOR THIGH SELF-MASSAGE ON HIP RANGE-OF-MOTION IN TRAINED MEN

Estêvão Rios Monteiro, BSc 1 Andrew D. Vigotsky, BSc 2 Jefferson da Silva Novaes, PhD 1 Jakob Škarabot, MSc 3

Background: Self-massage is a ubiquitous intervention similar to massage, but performed by the recipient him- or herself rather than by a therapist, most often using a tool (e.g., foam roller, roller massager). Self-massage has been found to have a wide range of effects. It is particularly known for increasing flexibility acutely, although not always. The variability of the results in previous studies may potentially be a function of the tool used. Recent findings also suggest that self-massage exerts global effects. Therefore, increased flexibility should be expected in the areas adjacent to the ones treated.

Purpose To investigate the acute effects of foam rolling and rolling massage of anterior thigh on hip range-of-motion (ROM) – i.e., hip extension and hip flexion – in trained men.

Methods Eighteen recreationally active, resistance trained males visited the lab on two occasions over a 4-day period separated by at least a day. Each session included two baseline ROM measures of passive hip flexion and extension taken in a randomized fashion. Recording of baseline measures was followed by the intervention of the day, which was either foam rolling or rolling massage of the anterior thigh as per randomization. Immediately post intervention, passive hip flexion and hip extension ROM were reassessed. In order to assess the time course of improvements in ROM, hip flexion and hip extension ROM were reevaluated at 10, 20, and 30 minutes post-intervention.

Results Hip flexion and hip extension ROM increased immediately following both interventions (foam rolling or roller massager) and remained increased for 30 minutes post intervention. Foam rolling was statistically superior in

improving hip flexion and hip extension ROM immediately post intervention. However, im

mediately post-intervention was the only time point that measurements exceeded the minimum detectable change for both interventions.

Conclusion Both foam rolling and rolling massage appear to be effective interventions for improving hip flexion and extension ROM when applied to the anterior thigh, but the observed effects are transient in nature.

54. POSTURE**Posture and shoulder ext rot. Strength**

The International Journal of Sports Physical Therapy | Volume 13, Number 1 | February 2018 | Page 50

ORIGINAL RESEARCH**SHOULDER EXTERNAL ROTATOR STRENGTH IN RESPONSE TO VARIOUS SITTING POSTURES: A CONTROLLED LABORATORY STUDY**

Steven Pheasant, PT, PhD¹ Richard Haydt, PT, DPT, OCS, MTC, FAAOMPT¹ Thomas Gottstein, DPT¹ Anthony Grasso, DPT¹ Nicholas Lombard, DPT¹ Brandon Stone, DPT¹

ABSTRACT

Background: The forward head rounded shoulder (FHRS) sitting posture has been associated with decreased shoulder complex muscle strength and function. Upon clinical observation, the adverse effects of the FHRS sitting posture on shoulder complex isometric muscle strength is also present when testing controls for scapular position.

Hypothesis/Purpose: The purpose of the study was to assess the effect of various sitting postures on shoulder external rotator muscle isometric strength when the strength testing controls for scapular position.

Study Design: A cohort study, with subjects serving as their own controls.

Methods: One hundred subjects ages 20-26 participated in the study. Each subject was placed in a neutral cervical sitting (NCS) posture which was maintained for five minutes after which the strength of the dominant shoulder external rotators was immediately tested with the glenohumeral joint in the neutral position using a Micro-FET3 Hand Held Muscle Testing Dynamometer (HHMTD). Each subject was returned to the NCS posture for subsequent external rotator strength testing after five minutes in a FHRS sitting posture, five additional minutes in the NCS posture and five minutes in a retracted cervical sitting (RCS) posture resulting in each subjects' external rotator strength being tested on four occasions. Subjects were randomized for order between the FHRS and RCS postures.

Results: Mean strength values for each condition were normalized to the mean strength value for the 1st NCS condition for each subject. A statistically significant decline in shoulder external rotator strength following the FHRS sitting posture occurred compared to the appropriate postural conditions ($p < .05$). A frequency analysis revealed that 36% of the subjects demonstrated greater than 10% decline in external rotator strength following five minutes in the FHRS sitting posture. The average percentage of strength decline in those with greater than a 10% reduction in external rotator strength was 19%. Sixty-four percent of the subjects experienced less than a 10% decline in shoulder external rotator strength in response to the FHRS sitting posture.

Conclusion: Shoulder external rotator strength declined 8% following five minutes in the FHRS sitting posture. A sub-population of 36% demonstrated an average decline of 19% in shoulder external rotator strength following five minutes in the FHRS sitting posture. The strength decline appears to resolve over the short-term by returning to the NCS post

56. ATHLETICS**Trunk lean during pitching**

The International Journal of Sports Physical Therapy | Volume 13, Number 1 | February 2018 | Page 58

ORIGINAL RESEARCH**TRUNK LEAN DURING A SINGLE-LEG SQUAT IS ASSOCIATED WITH TRUNK LEAN DURING PITCHING**

Hillary A. Plummer, PhD, ATC¹ Gretchen D. Oliver, PhD, ATC² Christopher M. Powers, PhD, PT¹ Lori A. Michener, PhD, PT, ATC¹

ABSTRACT

Background: Impaired trunk motion during pitching may be a risk factor for upper extremity injuries. Specifically, increased forces about the shoulder and elbow have been observed in pitchers with excessive contralateral trunk lean during pitching. Because of the difficulty in identifying abnormal trunk motions during a high-speed task such as pitching, a clinical screening test is needed to identify pitchers who have impaired trunk motion during pitching.

Hypothesis/Purpose: The purpose of this study was to determine the relationship between the degree of lateral trunk lean during the single-leg squat and amount of trunk lean during pitching and if trunk lean during pitching can be predicted from lean during the single-leg squat.

Study Design: Controlled Laboratory Study; Cross-sectional.

Methods: Seventy-three young baseball pitchers (11.4 ± 1.7 years; 156.3 ± 11.9 cm; 50.5 ± 8.8 kg) participated. An electromagnetic tracking system was used to obtain trunk kinematic data during a single-leg squat task (lead leg) and at maximum shoulder external rotation of a fastball pitch. Pearson correlation coefficients for trunk lean during the single-leg squat and pitching were calculated. A linear regression analysis was performed to determine if trunk lean during pitching can be predicted from lean during the single-leg squat.

Results: There was a positive correlation between trunk lean during the single-leg squat and trunk lean during pitching ($r = 0.53$; $p < 0.001$). Lateral trunk lean during the single-leg squat predicted the amount of lateral trunk lean during pitching ($R^2 = 0.28$; $p < 0.001$).

Conclusions: A moderate positive correlation was observed between trunk lean during an SLS and pitching. Trunk lean during the single-leg squat explained 28% of the variance in trunk lean during pitching.

Level of Evidence: Diagnosis, level 3

Key Words: baseball, biomechanics, clinical screening test, lumbo-pelvic stability, throwing

59. PAIN

More than one chronic pain condition

ORIGINAL RESEARCH

As if one pain problem was not enough: prevalence and patterns of coexisting chronic pain conditions and their impact on treatment outcomes

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Introduction: The presence of multiple coexisting chronic pain (CP) conditions (eg, low-back pain and migraines) within patients has received little attention in literature. The goals of this observational longitudinal study were to determine the prevalence of coexisting CP conditions, identify the most frequent ones and patterns of coexistence, investigate the relationships among patients' biopsychosocial characteristics and number of CP conditions, and determine the impact of coexisting CP conditions on treatment response.

Patients and methods: A total of 3,966 patients attending multidisciplinary pain-treatment centers who were enrolled in the Quebec Pain Registry were included. Patients completed self-report and nurse-administered questionnaires before their first visit and 6 months later. Results were analyzed using descriptive statistics, factor and cluster analyses, negative binomials with log-link generalized linear models, and linear mixed-effect models.

Results: A third of patients reported coexisting CP conditions. No specific patterns of comorbidities emerged. The presence of coexisting CP conditions was associated with longer pain duration, older age, being female, and poorer quality of life. The presence of more than one CP condition did not have a clinically significant impact on treatment responses.

Discussion: The novelty of the study results relate to the heterogeneity that was found in the patterns of coexistence of CP conditions and the fact that having multiple CP conditions did not clinically impact treatment response. These results highlight the need for future research that examines causes of coexistence among CP conditions across the spectrum of CP, as opposed to focusing on specific conditions, and to examine whether multiple CP conditions impact on additional domains, such as treatment satisfaction. These results highlight the importance of studying the pathophysiological mechanisms underlying the development of coexisting CP conditions, in order eventually to prevent/minimize their occurrence and/or develop optimal treatment and management approaches.