

2. LBP

Kinesio tape helps balance

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Effects of Kinesio Taping on postural balance in patients with low back pain, a randomized controlled trial

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DOI: <https://doi.org/10.1016/j.jbmt.2019.01.002>

Purpose: to identify postural balance changes in subjects with low back pain after the application of Kinesio Taping, which is then compared to a no treatment control group, using baropodometric evaluation.

Methods: This randomized controlled trial was carried out on 50 individuals (both sexes) with chronic low back pain. They were then randomized into two groups: an experimental group - EG (treated with Kinesio Taping in the lumbar region) and a control group - CG (no intervention). Both groups underwent a baropodometric evaluation (mean plantar pressure, peak plantar pressure, plantar surface, mass distribution on right foot and left foot, mass distribution on forefoot and rear foot and base width) at four different moments: pre-intervention, 10 minutes, 48 hours, and 10 days after the intervention on the EG. The level of statistical significance was established at 5%.

Results: Significant changes were observed in the EG compared to the CG. In the EG, peak pressure reduced on both right and left foot after Kinesio Taping application; the right base width was reduced, and the mass distribution between the forefoot and the rear foot normalized towards the ideal 50% distribution. These changes happened 48 hours after the Kinesio Taping application, with effects lasting up to 10 days.

Conclusion: The use of Kinesio Taping in the lumbar region of subjects with chronic low back pain improved postural balance. This is proved by changes in peak plantar pressure, plantar surface, and mass distribution 48 h after Kinesio Taping application, with effects lasting up to 10 days.

7. PELVIC ORGANS/WOMAN'S HEALTH

Contraceptive use and sleep

J Sleep Res , e12983 2020 Jan 27

Hormonal Contraceptive Use and Subjective Sleep Reports in Women: An Online Survey

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- PMID: 31989746 DOI: 10.1111/jsr.12983

Abstract

Female sexual hormones have known hypnogenic effects and the use of hormonal replacement therapy in postmenopausal women leads to improvement in sleep quality.

However, the effects of hormonal contraceptives in women of reproductive age are still scarcely understood. This study sought to evaluate the impact of hormonal contraceptive use on subjective self-reports of sleep through a web-based cross-sectional survey. A total of 2,055 women between 18 and 40 years old participated by answering an online questionnaire evaluating hormonal contraceptive use, sleep-related characteristics and related features. Sleep assessment tools comprised the Epworth Sleepiness Scale (ESS) and the Insomnia Severity Index (ISI). Statistical comparisons were performed between hormonal contraceptive users and those who reported no current use. Analyses were repeated to compare users of combined contraceptives with users of progestagens only, as well as to compare users of different generations of contraceptives. Among the total sample, 1,286 participants met the inclusion criteria (918 of them were currently taking a hormonal contraceptive). Contraceptive users reported more frequent sleep complaints and had higher scores on ESS and ISI, which means increased excessive daytime sleepiness and more insomnia symptoms. Women using progestagen-only therapies reported lower total sleep duration compared with combined therapy. Users of third-generation contraceptives showed lower total sleep time and higher ISI score when compared with non-users.

In conclusion, contraceptive users have more insomnia symptoms and increased excessive daytime sleepiness when compared with women who do not use any hormonal contraceptive method, and progestagen-only therapy was associated with lower sleep duration.

Relationship between IBS and endometriosis**March 2020** Volume 246, Pages 99–105**A systematic review and meta-analysis of the associations between endometriosis and irritable bowel syndrome**Khadija Saidi^a Shantanu Sharma^a Bodil Ohlsson^bDOI: <https://doi.org/10.1016/j.ejogrb.2020.01.031>

Endometriosis and Irritable Bowel Syndrome (IBS) are common conditions among young women of reproductive age. The etiologies to the diseases are uncertain, but multifactorial pathophysiology has been proposed for each of them.

Many studies have examined the two conditions separately, but the literature on the associations between endometriosis and IBS is sparse. However, there is an increasing amount of research on how endometriosis patients are likely to also have a diagnosis of IBS. Furthermore, endometriosis shares several features with IBS, such as low-grade inflammation and visceral hypersensitivity. This systematic review summarized published original articles in English that have compared associations between endometriosis and IBS. The inclusion criteria for articles in the review were: i) endometriosis was diagnosed by surgical methods, ii) gastrointestinal symptoms were examined in a structured manner and iii) IBS was diagnosed by Rome criteria. From the initial 254 publications identified on PubMed, Web of Science and EMBASE, 13 fulfilled the criteria and could finally be included in the summary. The findings from the review showed that women diagnosed with endometriosis seem to have a twofold or threefold risk to also fulfill the criteria for IBS. The summary risk estimate of the four studies included in the meta-analysis was 2.39 (95 % confidence interval: 1.83–3.11). In women initially diagnosed with IBS, some studies reported a threefold risk of having an endometriosis diagnosis. Despite the strong associations reported between the two conditions, this review also revealed a gap in adjusting for factors that may have affected the expression of gastrointestinal symptoms, e.g., phases of the menstrual cycle, medication and psychological aspects, which may have interpretation of the reviewed articles' results.

The conclusion of this review is that there is a coexistence of gastrointestinal symptoms fulfilling the Rome criteria in patients with endometriosis, but it is uncertain whether there is a true comorbidity between endometriosis and IBS, or whether the gastrointestinal symptomatology in endometriosis depends on medication. Additionally, the adequacy of the Rome criteria to differentiate IBS from the shared symptomatology of other diseases with visceral hypersensitivity must be further evaluated.

8. VISCERA

Flora and autism

Association Between Gut Microbiota and Autism Spectrum Disorder: A Systematic Review and Meta-Analysis

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PMID: 31404299 PMCID: PMC6673757 DOI: 10.3389/fpsy.2019.00473

Autism spectrum disorder (ASD) is characterized by stereotyped behavior and deficits in communication and social interactions.

Gastrointestinal (GI) dysfunction is an ASD-associated comorbidity, implying a potential role of the gut microbiota in ASD GI pathophysiology. Several recent studies found that autistic individuals harbor an altered bacterial gut microbiota. In some cases, remodeling the gut microbiota by antibiotic administration and microbiota transfer therapy reportedly alleviated the symptoms of ASD. However, there is little consensus on specific bacterial species that are similarly altered across individual studies. The aim of this study is to summarize previously published data and analyze the alteration of the relative abundance of bacterial genera in the gut microbiota in controls and individuals with ASD using meta-analysis. We analyzed nine studies, including 254 patients with ASD, and found that children with ASD had lower percentages of *Akkermansia*, *Bacteroides*, *Bifidobacterium*, and *Parabacteroides* and a higher percentage of *Faecalibacterium* in the total detected microflora compared to controls. In contrast, children with ASD had lower abundance of *Enterococcus*, *Escherichia coli*, *Bacteroides*, and *Bifidobacterium* and higher abundance of *Lactobacillus*.

This meta-analysis suggests an association between ASD and alteration of microbiota composition and warrants additional prospective cohort studies to evaluate the association of bacterial changes with ASD symptoms, which would provide further evidence for the precise microbiological treatment of ASD.

12 A. WHIPLASH

Altered eye head coordination

A pilot study on the evaluation of eye, head, and trunk coordination in subjects with chronic whiplash during a target-tracking task - A driving context approach.

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DOI: <https://doi.org/10.1016/j.msksp.2020.102124>

Highlights

- Eye and head response time and time to reach the targets were delayed in chronic WAD.
- Increased eye motion to compensate for limited neck motion was found in chronic WAD.
- Indications of impairments of eye and head coordination in chronic WAD was found.
- Alterations found in subjects with chronic WAD may impact their drive safety.

Background

Motor vehicle accidents (MVA) are the most common causes of whiplash injuries. Difficulties with driving and changes in driving behavior are reported by subjects with chronic whiplash associated disorders (WAD). Proper eye and head coordination is required for driving tasks. Disturbances of eye and head coordination were found in these subjects with chronic WAD.

Objectives

The objective of this pilot study is to evaluate eye, head and trunk coordination in subjects with chronic WAD due to MVA and healthy controls during a target-tracking task using a functionally oriented approach in the context of driving.

Design

Cross-sectional.

Method

The subjects performed target tracking tasks that reproduced eye and head movements required while driving. Head and trunk motion was captured using a motion capture system and eye movement was captured with an eye-tracker. Response time, time to target, and eye, head, and trunk contribution of movement were measured.

Results/findings

Subjects with chronic WAD presented delayed response time and time to reach the targets with both eyes and head compared to the control group, and tended to compensate the lack of neck motion with increased eye motion.

Conclusions

This study shows indications of impairments of eye and head coordination in chronic WAD due to MVA when compared to healthy subjects. These alterations may have implications for driving safety.

13 B. TMJ/ORAL**Bruxism and C spine****February 2020** Volume 45, 102073**Bruxism, temporomandibular dysfunction and cervical impairments in females – Results from an observational study**Harry von Piekartz^{a,*,} Charlotte Rösner^{a,} Angelina Batz^{a,} Toby Hall^{b,} Nicolaus Ballenberger^{a,}
DOI: <https://doi.org/10.1016/j.msksp.2019.102073>**Highlights**

- Bruxism is significantly associated with neck disability with medium sized effect.
- MD is an independent predictor for head/neck pain and cervical dysfunction.
- Pain associated with movement tests and tissue sensitivity are factors in bruxism.
- Cervical tests of pain and not ROM impairment are important in bruxism.

Bruxism is highly prevalent and defined as abnormal habitual mouth activity including clenching of the teeth and increased jaw muscle activity. The association between bruxism and temporomandibular dysfunction (TMD) is debated, in particular the association between cervical spine impairments, bruxism, and TMD. Hence the purpose of this study was to identify the relationship between bruxism, TMD, and cervical spine impairments.

Methods

This observational study categorized 55 female volunteers suitable for evaluation to a bruxism (n = 33) or non-bruxism group (n = 22) based on comprehensive screening using questionnaires and visual observation of the mouth by 2 independent dentists. Following this, both groups were evaluated for TMD, severity and location of head/neck pain, neck disability index (NDI), cervical spine impairments, and tissue mechanosensitivity. Regression analysis was used to evaluate the relationship between bruxism, TMD severity, and cervical impairments.

Results

Coefficients of pain and bruxism were significantly associated with NDI scores (0.43, $p < 0.001$; 3.24, $p = 0.01$) with large and medium sized effects. As a consequence, both severity of TMD and bruxism status are independently associated with cervical impairments. Having TMD is an independent predictor for head/neck pain and cervical impairments. Pain associated with movement tests and tissue mechanosensitivity was found to be an important factor in bruxism.

Conclusion

Clinicians need to be aware that signs of cervical movement impairment are not likely to be associated with bruxism, rather they should focus on improving orofacial function and tissue mechanosensitivity.

13 D. SLEEP**Exercise aids in sleep**

J Physiother , 58 (3), 157-63 2012

Exercise Training Improves Sleep Quality in Middle-Aged and Older Adults With Sleep Problems: A Systematic Review

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- PMID: 22884182 DOI: 10.1016/S1836-9553(12)70106-6

Question: Does an exercise training program improve the quality of sleep in middle-aged and older adults with sleep problems?

Design: Systematic review with meta-analysis of randomised trials.

Participants: Adults aged over 40 years with sleep problems.

Intervention: A formal exercise training program consisting of either aerobic or resistance exercise.

Outcome measures: Self-reported sleep quality or polysomnography.

Results: Six trials were eligible for inclusion and provided data on 305 participants (241 female). Each of the studies examined an exercise training program that consisted of either moderate intensity aerobic exercise or high intensity resistance exercise. The duration of most of the training programs was between 10 and 16 weeks. All of the studies used the self-reported Pittsburgh Sleep Quality Index to assess sleep quality. Compared to the control group, the participants who were randomised to an exercise program had a better global Pittsburgh Sleep Quality Index score, with a standardised mean difference (SMD) of 0.47 (95% CI 0.08 to 0.86). The exercise group also had significantly reduced sleep latency (SMD 0.58, 95% CI 0.08 to 1.08), and medication use (SMD 0.44, 95% CI 0.14 to 0.74). However, the groups did not differ significantly in sleep duration, sleep efficiency, sleep disturbance, or daytime functioning.

Conclusion: Participation in an exercise training program has moderately positive effects on sleep quality in middle-aged and older adults. Physical exercise could be an alternative or complementary approach to existing therapies for sleep problems.

14. HEADACHES

Aura's and visual sensitivity

Sensory Hypersensitivity Symptoms in Migraine With vs Without Aura: Results From the American Registry for Migraine Research

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PMID: 31965576 DOI: 10.1111/head.13745

Background and objectives: Migraine with aura (MwA) is associated with increased brain hyper-responsiveness to visual stimuli and increased visual network connectivity relative to migraine without aura (MwoA). Despite this, prior studies have provided conflicting results regarding whether MwA is associated with higher photophobia symptom scores compared to MwoA. The relationships between MwA and other types of sensory hypersensitivity, such as phonophobia and cutaneous allodynia (CA), have not been previously investigated. The purpose of this cross-sectional observational study was to investigate whether MwA is associated with greater symptoms of photophobia, phonophobia, and CA compared to MwoA.

Methods: This analysis included 321 migraine patients (146 MwA; 175 MwoA) who had been enrolled into the American Registry for Migraine Research. The diagnosis of either MwoA or MwA was determined by headache specialists using ICHD diagnostic criteria. Patients completed the Photosensitivity Assessment Questionnaire, the Hyperacusis Questionnaire, and the Allodynia Symptom Checklist. Mean or median values were compared between groups. Regression models were created to analyze the relationship between MwA with photophobia scores, hyperacusis scores, and the presence of interictal CA.

Results: Those with MwA had higher mean photophobia scores than those with MwoA (4.1 vs 3.0, $P = .0003$). MwA was positively associated with photophobia symptom severity ($B = 0.50$ [$SE = 0.14$], $P = .0003$), after controlling for age, patient sex, and headache frequency. Aura was not associated with hyperacusis symptom severity ($B = 0.07$ [$SE = 0.08$], $P = .346$) or the presence of interictal CA (OR 1.33 [95% CI 0.70-2.53], $P = .381$).

Conclusion: MwA is associated with higher photophobia symptom scores compared to MwoA. Aura is not associated with greater hyperacusis or interictal allodynia scores. These findings complement prior imaging and neurophysiologic studies that demonstrated MwA to be associated with hyper-responsiveness of brain visual processing regions. The findings suggest that MwA is associated specifically with visual hypersensitivity, as opposed to being associated with a general hypersensitivity to multiple types of sensory stimuli.

32 A. KNEE/ACL**Deficient knees have increased rotatory instability****The influences of chronicity and meniscal injuries on pivot shift in anterior cruciate ligament-deficient knees: Quantitative evaluation using an electromagnetic measurement system**

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DOI: <https://doi.org/10.1016/j.arthro.2020.01.018>

Purpose

To investigate the influences of time from injury to surgery and meniscal injuries on knee rotational laxity in anterior cruciate ligament (ACL)-deficient knees using the electromagnetic system (EMS) retrospectively.

Methods

Ninety-four unilateral ACL-injured patients (44 males and 50 females, mean age: 27.3 ± 11.8 years) were included. The pivot-shift test was performed prior to ACL reconstruction, as was a quantitative evaluation using EMS to determine tibial acceleration. Patients were divided into four groups according to the chronicity: group 1, within 3 months (22 patients); group 2, between 3 and 6 months (29 patients); group 3, between 6 and 12 months (23 patients); and group 4, more than 12 months (20 patients). The presence of meniscal injuries was examined arthroscopically.

Results

The tibial acceleration was significantly greater in group 4. There was a positive correlation between tibial acceleration and the time from injury to surgery ($r=0.47$, $p=0.02$). In group 1, 2 and 3, the tibial acceleration in patients with a lateral meniscal injury was significantly greater than in patients with a medial meniscal injury and without meniscal injury. When patients with lateral meniscal injury were excluded (leaving those with medial meniscus injury or without meniscal injury), group 4 had significantly greater accelerations than other groups.

Conclusions

In ACL-deficient knees, rotational laxity increased with time and the increased rotational laxity was evident more than 1 year after injury while it increased with concomitant lateral meniscal injuries within 1 year after injury.

Flexion strength deficit following hamstring repair

Arthroscopy: The Journal of Arthroscopic & Related Surgery

Assessment of flexion strength following single versus double hamstring tendon harvest for ACL reconstruction

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<https://doi.org/10.1016/j.arthro.2020.01.019>Get rights and content

Purpose

To compare isometric hamstring strength deficits, knee laxity, functional outcomes, and patient reported outcomes between patients who underwent ACL reconstruction with doubled semitendinosus and gracilis tendon autograft (ST/G) versus quadrupled semitendinosus autograft (ST), at a minimum follow-up of 1 year post-operatively.

Methods

Patients who underwent ACL reconstruction with ST/G or ST hamstring autografts were retrospectively identified. Isometric hamstring strength was tested with a hand held dynamometer at 30, 60, and 90 degrees of knee flexion. Anterior knee laxity was assessed using a KT-1000 arthrometer. Functional outcomes were collected using the single leg hop test and single leg squat test. Side-to-side differences were determined and compared between the ST/G and ST groups. Patient reported outcomes were collected on all patients.

Results

Eighty-four patients who underwent ST/G ($n = 34$) or ST ($n = 50$) autograft ACL reconstruction were recruited to participate in this study. There was no difference in knee laxity between the groups. Side-to-side hamstring strength deficits increased with increased flexion angles. At 90° of flexion, the ST/G group had a significantly greater flexion strength deficit compared to the ST group ($37.8 \pm 15.1\%$ versus $24.7 \pm 12.5\%$, P -value < 0.001). Aside from a significant difference in the KOOS pain Score (P -value 0.045), no other significant differences in functional or patient reported outcomes between the groups were identified.

Conclusion

Patients who underwent ACL reconstruction with ST/G compared to ST autograft have a significantly greater isometric flexion strength deficit at 90° of flexion. Future investigations are required to determine the clinical relevance of this difference, and whether specialized therapy protocols can mitigate this deficit.

45 A. MANUAL THERAPY LUMBAR & GENERAL**Manipulation**

Musculoskeletal Science and Practice Volume 45, February 2020, 102098

Review article

Completeness of the description of manipulation and mobilisation techniques in randomized controlled trials in neck pain; A review using the TiDieR checklist

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<https://doi.org/10.1016/j.msksp.2019.102098>Get rights and content

Highlights

- Manipulation or mobilization techniques are difficult to replicate.
- Poor reporting jeopardizes the external validity of RCTs.
- Due to poor reporting it is difficult to judge the effectiveness of interventions.
- A checklist like the TiDieR checklist should be recommended.

Abstract**Study design**

A secondary analysis of a systematic review.

Background

Manipulations or mobilizations are commonly used interventions in patients with mechanical neck pain. The treatment effects have often been studied in randomized controlled trials (RCT) which are generally considered the gold standard in evaluating the treatment effects, mainly due to its high internal validity. External validity is defined as the extent to which the effects can be generalised to clinical practice. An important prerequisite for this is that interventions used in clinical trials can be replicated in clinical practice. It can be questioned if interventions utilized in randomized controlled trials can be translated into clinical practice.

Objectives

The overall aim of this study is to examine whether the quality of the description of manipulation and mobilization interventions is sufficient for to replication of these interventions in clinical practice.

Methods

A comprehensive literature search was performed. Two independent researchers used the Template for Intervention Description and Replication (TiDieR) which is a 12-item checklist for describing the completeness of the interventions.

Results

Sixty-seven articles were included that used manipulation and/or mobilization interventions for patients with mechanical neck pain. None of the articles describe the intervention e.g. all the items on the TiDieR list. Considering item 8 (a-f) of the TiDieR checklist only one article described the used techniques completely.

Conclusion

Manipulation or a mobilization interventions are poorly reported in RCTs, which jeopardize the external validity of RCTs, making it difficult for clinicians and researchers to replicate these interventions.

Cupping helps chronic pain

The Journal of Pain Review Article

Cupping for patients with chronic pain: a systematic review and meta-analysis

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Highlights

- Interest in non-pharmacological pain treatment options such as cupping is growing
- 18 randomized trials have investigated effects of cupping on chronic pain
- Cupping has clinically meaningful short-term effects on pain and disability
- Cupping is relatively safe in chronic pain patients

Abstract

There is a growing interest in non-pharmacological pain treatment options such as cupping. This meta-analysis aimed to assess the effectiveness and safety of cupping in chronic pain.

PubMed, Cochrane Library, and Scopus were searched through November 2018 for randomized controlled trials on effects of cupping on pain intensity and disability in patients with chronic pain. Risk of bias was assessed using the Cochrane risk-of-bias tool.

Of the 18 included trials (n=1,172), most were limited by clinical heterogeneity and risk of bias. Meta-analyses found large short-term effects of cupping on pain intensity compared to no treatment (standardized mean difference [SMD]=-1.03; 95% confidence interval [CI]=-1.41,-0.65), but no significant effects compared to sham cupping (SMD=-0.27; 95%CI=-0.58,0.05) or other active treatment (SMD=-0.24; 95%CI=-0.57,0.09). For disability, there were medium-sized short-term effects of cupping compared to no treatment (SMD=-0.66; 95%CI=-0.99,-0.34), and compared to other active treatments (SMD=-0.52; 95%CI=-1.03,-0.0028), but not compared to sham cupping (SMD=-0.26; 95%CI=-0.57, 0.05). Adverse events were more frequent among patients treated with cupping compared to no treatment; differences compared to sham cupping or other active treatment were not statistically significant.

Cupping might be a treatment option for chronic pain, but the evidence is still limited by the clinical heterogeneity and risk of bias.

Perspective: This article presents the results of a meta-analysis aimed to assess the effectiveness and safety of cupping with chronic pain. The results suggest that cupping might be a treatment option; however, the evidence is still limited due to methodical limitations of the included trials. High quality trials seem warranted.

48 A. STM**CRPS myofascial pain**

July 2019 Volume 23, Issue 3, Pages 547–554

Proximal myofascial pain in patients with distal complex regional pain syndrome of the upper limb

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DOI: <https://doi.org/10.1016/j.jbmt.2019.02.015>

Background

Patients suffering from complex regional pain syndrome (CRPS) endure myofascial-related pain in at least 50% of cases.

Aims

To evaluate the association of upper limb CRPS with myofascial pain in muscles that might influence arm or hand pain, and to evaluate whether the paraspinal skin and subcutaneous layers' tenderness and allodynia are associated with CRPS.

Methods

A case-control study comprising 20 patients presenting with upper limb CRPS, and 20 healthy controls matched for sex and age, were evaluated in the thoracic paraspinal area and myofascial trigger points (MTrPs) (infraspinatus, rhomboids, subclavius, serratus posterior superior and pectoralis minor) via a skin rolling test.

Results

The prevalence of MTrPs in the affected extremity of the subjects was significantly higher than in the right limb of the controls: 45% exhibited active and latent MTrPs in the infraspinatus muscle ($\chi^2 = 11.613$, $p = 0.001$); 60% in active and latent MTrPs in the subclavius muscle ($\chi^2 = 17.143$, $p < 0.001$); and in the pectoralis minor muscle ($\chi^2 = 13.786$, $p < 0.001$). In addition, 55% of the cases exhibited active and latent MTrPs in the serratus posterior superior muscle ($\chi^2 = 15.172$, $p < 0.001$). Significant differences between the groups in skin texture and pain levels ($p = 0.01$, $p < 0.001$, respectively) demonstrated that CRPS patients felt more pain, and their skin and subcutaneous layers were much tighter than in the healthy controls.

Conclusion

There is a high prevalence of MTrPs in the shoulder and upper thoracic area muscles in subjects who suffer from CRPS. We recommend adding an MTrPs evaluation to the standardized examination of these patients.

Cupping of trigger points

July 2019 Volume 23, Issue 3, Pages 532–538

Effects of myofascial trigger point dry cupping on pain and function in patients with plantar heel pain: A randomized controlled trial

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DOI: <https://doi.org/10.1016/j.jbmt.2019.05.016>

Objective

To investigate the effects of dry cupping on calf muscle myofascial trigger points (MTrPs) on pain and function in patients with plantar heel pain.

Methods

Seventy-one patients were randomly divided into an intervention group or control group. Both groups performed stretching exercises for the calf muscle and plantar fascia and ankle dorsiflexion exercises. The intervention group also received dry cupping. The primary outcome measures were visual analogue scale (VAS), pressure pain threshold (PPT), and patient-specific functional scale (PSFS). The secondary outcomes were ankle dorsiflexion range of motion (ROM) and ankle plantar flexor strength. These measurements were performed at baseline, immediately after intervention, and after 2 days.

Results

Current VAS significantly decreased immediately in the intervention group ($p = 0.002$), but not in the control group ($p \geq 0.220$). Morning VAS decreased significantly in both groups ($p < 0.001$) after 2 days, but decreased more in the intervention group ($p = 0.006$). Trigger point PPT significantly improved immediately in the intervention group ($p = 0.003$), but not in the control group ($p = 0.112$). Both groups improved significantly in PSFS ($p < 0.001$) and ankle dorsiflexion ROM ($p < 0.001$). Plantar flexor strength significantly increased immediately in the intervention group ($p < 0.001$), but not in the control group ($p = 0.556$).

Conclusion

Adding dry cupping on calf MTrPs to self-stretching and ankle dorsiflexion exercises for patients with plantar heel pain was superior to only self-stretching and active ankle dorsiflexion exercises in pain, ankle dorsiflexion ROM, and plantar flexor strength.

49. STRETCHING

Changes of static and dynamic stretching

January 2020 Volume 24, Issue 1, Pages 221–227

The effects of combined static and dynamic stretching of anti-gravitational muscles on body flexibility and standing balance: A preliminary study of healthy young participants

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DOI: <https://doi.org/10.1016/j.jbmt.2019.05.011>

Introduction

Falling is a leading cause of injury-related death. Previous studies reported that an impairment of standing balance is one of the causative factors associated with falling. The combined use of static and dynamic stretching has been reported as a treatment method for improving standing balance. As one of the combined methods, stretching based on Mézières' concept, which has an efficacy on the improvement of body flexibility, has been used. However, it is not fully clear whether stretching based on Mézières' concept can improve standing balance. This study aimed to examine the effects of combined method of static and dynamic stretching of anti-gravitational muscles based on Mézières' concept on body flexibility and standing balance.

Methods

This study employed a quasi-randomized controlled trial design. Thirteen subjects were assigned randomly to one of two groups: stretching or control. A sit and reach test (SRT), functional reach test (FRT), and total trajectory length of center of pressure (COP) during static standing were assessed at pre- and post-intervention. An independent *t*-test was used to compare the rate of improvement between both groups at each assessment.

Results

The stretching group demonstrated a significantly larger rate of improvement in the total trajectory length of COP compared to the control group. In the SRT and FRT, the stretching group showed a trend toward improvement compared to the control group, but did not achieve statistical significance.

Conclusions

The combined use of static and dynamic stretching of anti-gravitational muscles might have the potential to improve the standing balance.

50 A. MOTOR CONTROL

Movement strategies

Musculoskeletal Science and Practice Volume 45, February 2020, 102100

Masterclass

Assessment of movement coordination strategies to inform health of movement and guide retraining interventions

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<https://doi.org/10.1016/j.msksp.2019.102100> Get rights and content

Highlights

- Changes in movement coordination strategies are altered in clinical groups.
- Cognitive movement control tests identify changes in movement coordination strategies.
- Loss of movement choices may be relevant for clinical presentations.
- Retraining aims to restore choice in movement to support long term movement health.

Abstract

Introduction

Exploring characteristics of human movement has long been the focus of clinicians and researchers. Changes in movement coordination strategies have been identified in the presence of pain highlighting the need for assessment in clinical practice. A major development in the understanding of movement related disorders is recognition of individual differences in presentation and consequently the need to tailor interventions based on assessment.

Purpose

The purpose of this masterclass is to build a rationale for the clinical assessment of movement coordination strategies, exploring loss of movement choices, coordination variability, and to present a clinical framework for individualised management, including the use of cognitive movement control tests and retraining interventions. An approach for the qualitative rating of movement coordination strategies is presented. A compromised movement system may be one characterised by a lack of ability to access motor abundance and display choice in the use of movement coordination strategies. The identification of lost movement choices revealed during the assessment of movement coordination strategies is proposed as a marker of movement health.

Implications for practice

The health of the movement system may be informed by the ability to display choice in movement coordination strategies. There is evidence that restoring these choices has clinical utility and an influence on pain and improved function. This approach seeks to provide individuals with more flexible problem solving, enabled through a movement system that is robust to each unique challenge of function. This assessment framework sits within a bigger clinical reasoning picture for sustained quality of life.

54. POSTURE

Plantar pressure changes with head motions

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PREVENTION & REHABILITATION

Baropodometric quantification and implications of muscle coactivation in the lower limbs caused by head movement: A prospective study

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Background

In healthy young adults, muscle coactivation can sometimes be induced by remote voluntary contractions when the motor task is forceful, maximal, tiring, or cyclic and brief.

Objectives

To show that a change in plantar pressure is an unequivocal response to backward movement of the head, and to contribute to a better understanding of physiotherapy methods that involve remote muscle activation.

Methods

Involuntary coactivation was quantified as a percentage of the anteroposterior plantar pressure distribution, using a baropodometric platform in a population of young adults. The baropodometric data were collected from a 1s recording after 30 s in the reference condition, and from 1s recordings during the first second and then during the 120th second in the test condition. The results were analyzed with Bayesian statistics (Markov chains and Monte Carlo integration techniques).

Results

90 adults participated in the study (age range: 19–26; 38 males and 52 females). The forefoot plantar pressure increased in all cases, by a mean multiplicative factor (on a logit scale) of 1.12 (from 72.24% to 74.45%) when the head was aligned over the trunk.

Conclusions

This 90-participant trial confirmed our initial hypothesis: a increase in forefoot plantar pressure is a systematic response to the motor task (head movement), and suggests greater recruitment of the plantar flexor muscles. A spinal reflex and/or a previously unknown form of motor overflow might be involved in this phenomenon. These results support the development of inductive physiotherapy techniques based on remote muscle activation in the treatment of musculoskeletal disorders.

61. FIBROMYALGIA

Lower performance capacity

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Original Research

Comparison of functional and isokinetic performance between healthy women and women with fibromyalgia

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Background

Fibromyalgia is a condition that predominantly affects women and is characterized by chronic pain. As a consequence, it has been suggested that there is a decrease in muscle strength, a prime component of physical fitness, and thus a reduction in functional performance. Therefore, it is necessary to perform a complete and reliable physical evaluation of functional performance. The aim of this study was to compare the functional and isokinetic performance between women with fibromyalgia and healthy women.

Methods

This is a cross-sectional study that evaluated 40 women divided into 2 groups: Healthy Group (HG) (n = 20); Fibromyalgia Group (FG) (n = 20), aged between 30 and 50 years. The individuals were submitted to an evaluation of functional performance through the following tests: Timed Up and Go (TUGT), Chair Stand Test, 6-Minute Walk test (6MWT), Sit and Reach Test, and Isokinetic performance of the knee extensor and flexor groups. Statistical analysis was performed by the statistical SPSS 22.0 software for Windows.

Results

A lower index was observed in the 6-min Walk Test ($p < 0.001$), Chair Stand Test ($p < 0.001$), and VO_2 Peak ($p < 0.001$) for FG. There were no significant differences in isokinetic performance ($p > 0.05$).

Conclusions

The results point to lower functional performance in individuals with fibromyalgia when compared to healthy individuals of the same age and physical activity level. Therefore, it is evident that performing therapeutic exercises of different modalities to improve the functional performance of patients with FM is important.