

2. LBP

Advise in LBP

Spine J. 2017 Jul 13. pii: S1529-9430(17)30328-5. doi: 10.1016/j.spinee.2017.05.030

Advice for acute low back pain: A comparison of what research supports and what guidelines recommend.

Stevens ML¹, Lin CC², de Carvalho FA³, Phan K⁴, Koes B⁵, Maher CG².

Background Advice is widely considered an effective treatment for acute low back pain (LBP) however details on what and how to deliver this intervention is less clear.

Purpose We assessed and compared clinical trials which test advice for acute LBP to practice guidelines for their completeness of reporting and concordance on the content, method of delivery and treatment regimen of advice interventions.

Study Design/Setting Systematic Review Methods Advice RCTs were identified through a systematic search. Guidelines were taken from recent overviews of guidelines for LBP. Completeness of reporting was assessed using the TIDieR Checklist. Thematic analysis was used to characterise advice interventions into topics across the aspects of content, method of delivery and regimen. Concordance between clinical trials and guidelines was assessed by comparing the number of trials that found a statistically significant treatment effect for an intervention that included a specific advice topic against the number of guidelines recommending that topic.

Results The Median (IQR) completeness of reporting for clinical trials and guidelines was 8 (7-9) and 3 (2-4) out of 9 items on the TIDieR Checklist, respectively. Guideline recommendations were discordant with clinical trials for 50% of the advice topics identified.

Conclusion Completeness of reporting was less than ideal for RCTs and extremely poor for guidelines. The recommendations made in guidelines of advice for acute LBP were often not concordant with the results of clinical trials. Taken together these findings mean that the potential clinical value of advice interventions for patients with acute LBP is probably not being realised.

Fear related components**Making Sense of Low Back Pain and Pain-Related Fear**

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Synopsis

Pain-related fear is implicated in the transition from acute to chronic low back pain and the persistence of disabling low back pain, making it a key target for physiotherapy intervention.

The current understanding of pain-related fear is that it is a psychopathological problem where people who catastrophise about the meaning of pain become trapped in a vicious cycle of avoidance behaviour, pain and disability, as recognised in the Fear Avoidance Model. However there is evidence that pain-related fear can also be seen as a common sense response to deal with low back pain, for example, when one is told that their back is vulnerable, degenerating or damaged. In this instance avoidance is a common sense response to protect a 'damaged' back. While the Fear Avoidance Model proposes that when someone first develops low back pain, the confrontation of normal activity in the absence of catastrophising leads to recovery, the pathway to recovery for individuals trapped in the fear avoidance cycle is less clear. Understanding pain-related fear from a common sense perspective enables physiotherapists to offer individuals with low back pain and high fear a pathway to recovery by altering how they make sense of their pain.

Drawing on a body of published work exploring the lived experience of pain-related fear in people with low back pain, this Clinical Commentary illustrates how Leventhal's Common Sense Model may assist Physiotherapists to understand the broader sense-making processes involved in the fear avoidance cycle and how they can be altered to facilitate fear reduction by applying strategies established in the behavioural medicine literature.

J Orthop Sports Phys Ther, Epub 13 Jul 2017. doi:10.2519/jospt.2017.7434

Biopsychosocial rehab

Cochrane Database of Systematic Reviews **Multidisciplinary biopsychosocial rehabilitation for subacute low back pain** Authors Teresa J Marin, Dwayne Van Eerd, mma Irvin, Rachel Couban, Bart W Koes, Antti Malmivaara, Maurits W van Tulder, Steven J Kamper

DOI: 10.1002/14651858.CD002193.pub2 View/save citation **Background** Low back pain (LBP) is associated with enormous personal and societal burdens, especially when it reaches the chronic stage of the disorder (pain for a duration of more than three months). Indeed, individuals who reach the chronic stage tend to show a more persistent course, and they account for the majority of social and economic costs. As a result, there is increasing emphasis on the importance of intervening at the early stages of LBP. According to the biopsychosocial model, LBP is a condition best understood with reference to an interaction of physical, psychological, and social influences. This has led to the development of multidisciplinary biopsychosocial rehabilitation (MBR) programs that target factors from the different domains, administered by healthcare professionals from different backgrounds. This review is an update of a Cochrane Review on MBR for subacute LBP, which was published in 2003. It is part of a series of reviews on MBR for musculoskeletal pain published by the Cochrane Back and Neck Group and the Cochrane Musculoskeletal Group. **Data collection and analysis** We used standard methodological procedures expected by Cochrane. In particular, the data extraction and 'risk of bias' assessment were conducted by two people, independently. We used the Cochrane tool to assess risk of bias and the GRADE approach to assess the overall quality of the evidence for each outcome. **Main results** We included a total of nine RCTs (981 participants) in this review. Five studies were conducted in Europe and four in North America. Sample sizes ranged from 33 to 351. The mean age across trials ranged between 32.0 and 43.7 years. All included studies were judged as having high risk of performance bias and high risk of detection bias due to lack of blinding, and four of the nine studies suffered from at least one additional source of possible bias. In MBR compared to usual care for subacute LBP, individuals receiving MBR had less pain (four studies with 336 participants; SMD -0.46, 95% CI -0.70 to -0.21, moderate-quality of evidence due to risk of bias) and less disability (three studies with 240 participants; SMD -0.44, 95% CI -0.87 to -0.01, low-quality of evidence due to risk of bias and inconsistency), as well as increased likelihood of return-to-work (three studies with 170 participants; OR 3.19, 95% CI 1.46 to 6.98, very low-quality of evidence due to serious risk of bias and imprecision) and fewer sick leave days (two studies with 210 participants; SMD -0.38 95% CI -0.66 to -0.10, low-quality of evidence due to risk of bias and imprecision) at 12-month follow-up. The effect sizes for pain and disability were low in terms of clinical meaningfulness, whereas effects for work-related outcomes were in the moderate range. However, when comparing MBR to other treatments (i.e. brief intervention with features from a light mobilization program and a graded activity program, functional restoration, brief clinical intervention including education and advice on exercise, and psychological counselling), we found no differences between the groups in terms of pain (two studies with 336 participants; SMD -0.14, 95% CI -0.36 to 0.07, low-quality evidence due to imprecision and risk of bias), functional disability (two studies with 345 participants; SMD -0.03, 95% CI -0.24 to 0.18, low-quality evidence due to imprecision and risk of bias), and time away from work (two studies with 158 participants; SMD -0.25 95% CI -0.98 to 0.47, very low-quality evidence due to serious imprecision, inconsistency and risk of bias). Return-to-work was not reported in any of the studies. Although we looked for adverse events in both comparisons, none of the included studies reported this outcome.

Authors' conclusions On average, people with subacute LBP who receive MBR will do better than if they receive usual care, but it is not clear whether they do better than people who receive some other type of treatment. However, the available research provides mainly low to very low-quality evidence, thus additional high-quality trials are needed before we can describe the value of MBP for clinical practice.

Non-adherence to care

Arch Phys Med Rehabil. 2017 Jul 6. pii: S0003-9993(17)30451-3. doi: 10.1016/j.apmr.2017.05.029

Patient non-adherence to guideline-recommended care in acute low back pain.

Bier JD¹, Kamper SJ², Verhagen AP³, Maher CG², Williams CM⁴.

OBJECTIVE:

To describe the magnitude of patient reported non-adherence with guideline-recommended care for acute low back pain.

DESIGN:

Secondary analysis of data from participants enrolled in the PACE trial, a randomised controlled trial evaluating the effectiveness of paracetamol for acute low back pain.

PARTICIPANTS:

Data from 1643 participants with acute low back pain.

INTERVENTIONS:

Guideline recommend care including; reassurance, simple analgesia, and the advice to stay active and avoid bed rest. Also advice against additional treatments and referral for imaging.

MAIN OUTCOME MEASURES:

Proportion of non-adherence with guideline-recommended care. Non-adherence was defined as 1) failure to consume the advised paracetamol dose, or 2) receipt of additional healthcare, tests, or medication during the trial treatment period (4 weeks). Multivariable logistic regression analysis was performed to determine the factors associated with non-adherence.

RESULTS:

In the first week of treatment, 39.7% of the participants were classified as non-adherent. Over the 4-week treatment period 70.0% were non-adherent, 57.5% did not consume the advised paracetamol dose. Higher perceived risk of persistent pain, lower level of disability and not claiming workers' compensation were associated with non-adherence with odds ratios ranging from 0.46 to 1.05.

CONCLUSIONS:

Adherence to guideline-recommended care for acute low back pain was poor. Most participants do not take the advised paracetamol dose. Higher perceived risk of persistence of complaints, lower baseline disability and participants not claiming workers' compensation were independently associated with non-adherence.

Activity limitations

BMJ Open. 2017 Jul 2;7(6):e013974. doi: 10.1136/bmjopen-2016-013974.

Predictors for future activity limitation in women with chronic low back pain consulting primary care: a 2-year prospective longitudinal cohort study.

Nordeman L^{1,2}, Thorselius L³, Gunnarsson R^{1,4,5}, Mannerkorpi K².

Author information

Abstract

OBJECTIVES:

To assess if body function, activity, participation, health-related quality of life and lifestyle behavioural factors can predict activity limitation in women with chronic low back pain (CLBP) in primary healthcare (PHC) 2 years later.

DESIGN:

A 2-year prospective longitudinal cohort study within PHC.

SETTINGS:

PHC in southwestern Sweden.

PARTICIPANTS:

The cohort comprised 130 women with CLBP attending PHC at baseline 2004-2005 and were reassessed after 2 years.

MEASURES:

The dependent outcome variable was self-reported activity limitation (Roland Morris disability questionnaire (RMDQ)) at 2-year follow-up. Independent predictors at baseline were age, body mass index, smoking, alcohol consumption, sleep quantity and quality, leisure time physical activity, a questionnaire of clinical manifestation of stress (Stress and Crises Inventory (SCI-93)), pain localisation, pain intensity, fatigue, anxiety, depression, RMDQ, work status, private social support, health-related quality of life and measures of physical performance specified as 6 min walk test (6MWT) and hand grip strength. Relation between baseline predictors and variation in later self-reported activity limitation (RMDQ) was analysed using multivariate linear regression.

RESULTS:

Ninety-five per cent (n=123/130) were followed up after 2 years. The participants were middle-aged (mean 45 (SD 10) years), mostly educated >9 years (88%; 108/123), mainly living with another adult (76%; 93/122) and born in Sweden (90%; 111/123). Seventy-nine per cent (97/123) were categorised as having work ability at baseline. The final prognostic model including 6MWT, SCI-93 and RMDQ at baseline explained 54% of the variance in self-reported activity limitation (RMDQ) at the 2-year follow-up.

CONCLUSIONS:

Lower physical performance, more severe clinical stress symptoms and more severe activity limitation predicted activity limitation after 2 years in women with CLBP within PHC. The results can give guidance for interventional trials aiming to improve physical capacity and decrease stress. The impact of the interaction between prognostic factors and interventions on activity limitation needs further investigation.

5. SURGERY

Mortality rates

Spine (Phila Pa 1976). 2017 Jul 15;42(14):1080-1087. doi: 10.1097/BRS.0000000000002188.

Mortality Caused by Surgery for Degenerative Lumbar Spine.

Salmenkivi J¹, Sund R, Paavola M, Ruuth I, Malmivaara A.

STUDY DESIGN:

Register study.

OBJECTIVE:

The purpose of this study was to assess the safety of lumbar spine surgery for degenerative disorders and to assess the predictive factors for mortality and causes of death.

SUMMARY OF BACKGROUND DATA:

Growing numbers and relative indications of spine surgery emphasize the importance of patient safety. We assessed the incidence of mortality related to surgery, overall case fatality and factors predicting mortality in elective spinal surgery.

METHODS:

A national database was utilized to assess patient characteristics, surgical procedures, and outcomes of degenerative spinal surgery in Finland. Patients were classified into four diagnostic categories: disc herniation, spinal stenosis, degenerative disc disease, and spondylolysis and spondylolisthesis. The mortality related to surgery and overall mortality in each diagnostic group was analyzed at 7 days, 30 days, 90 days, and 1 year after surgery. We categorized the deaths into medical errors, sequelae of surgery, surgery probably a contributing factor, and deaths not associated with surgery. Age, sex, comorbid conditions, and hospital characteristics were considered as potential risk factors for mortality.

RESULTS:

Out of 408 deaths (0.67% of total of 61,166 patients) deaths that occurred during the 1-year follow up, 49 deaths (12% of deaths, 0.08% of patients) were classified as having an association with surgery: two deaths by medical errors, 28 deaths by complications after surgery and 19 deaths related to the surgery. The surgery-related 1-year mortality was 0.08%. Age >75 years, male sex, diabetes, and hypertension showed an association with increased risk of death related to surgery.

CONCLUSION:

Mortality caused by elective spinal surgery is rare. Cardiovascular incidents are the most common reasons for deaths occurring soon after surgery. Consideration of expected gains and risks of surgery, prevention of unintended errors during surgery and recognition and treatment of complications once they occur are recommended.

LEVEL OF EVIDENCE: 3.

6. PELVIC GIRDLE

Radiographs of the SI

Analysis of dedicated sacroiliac views to improve reliability of conventional pelvic radiographs

Rheumatology

Omar A, et al.

The experts compared the antero–posterior (AP) pelvis view with the Ferguson view of the sacroiliac (SI) joint, to figure out a modality that has a clear advantage for grading of sacroiliitis. They found a general agreement between the Ferguson and AP pelvis X–ray intraclass correlation coefficient (ICC) and kappa scores. Hence, they concluded that either modality could be implemented to analyze the SI joint for sacroiliitis, as Ferguson view offered no clear superiority over the standard AP pelvis view.

Methods

- From an axial spondyloarthritis clinic registry, 109 patients fulfilling Assessment of SpondyloArthritis international Society (ASAS) criteria for axial spondyloarthritis who had AP pelvis and Ferguson views on the same day were identified.
- According to modified New York (NY) criteria, 2 rheumatologists independently scored the AP pelvis and Ferguson views.
- With the aid of kappa statistic and intraclass correlation coefficient (ICC), intra– and inter–reader agreements were obtained for both evaluations.
- Any change in diagnostic category dictated by the Ferguson vs the AP pelvis views was also examined.

Results

- From 109 patients, a total of 266 radiographs were analyzed.
- Intra–observer reliability of the observers displayed similar ICC scores; this was also reflected in the kappa for diagnosis of AS fulfilling modified NY criteria between the observers.
- The inter–rater agreement represented similar kappa values between the two modalities.
- When separately evaluating SI joints with score grading of 0–2, grade 2 showed the lowest kappa, reaching a low of 0.1 and 0.19 for the right SI joint for Ferguson and AP pelvis views, respectively.
- Both modalities were concordant diagnostically.
- Reclassification from AS to non–AS and vice versa was in the range 5–11%.

7. PELVIC ORGANS/WOMAN'S HEALTH

Vulvodynia

J Low Genit Tract Dis. 2017 Jul;21(3):209-214. doi: 10.1097/LGT.0000000000000318.

Vulvodynia-Younger Age and Combined Therapies Associate With Significant Reduction in Self-Reported Pain.

Aalto AP¹, Vuoristo S, Tuomaala H, Niemi RJ, Staff SM, Mäenpää JU.

OBJECTIVES:

Eight percent of women have vulvodynia (VD), a chronic pain disorder with unknown etiology. The aim of our study was to assess the efficacy of given VD treatments measured by numerical rating scale (NRS) for pain and patients' quality of life.

MATERIALS AND METHODS:

Study material consisted of a retrospective VD patient cohort (N = 70). Data were collected by postal questionnaires and review of the medical records.

RESULTS:

We report here a statistically significant reduction in NRS only with combination of therapies (median NRS before treatments 8 vs median NRS 4 after treatments, $p < .001$) but not with any individual therapy alone, i.e., physiotherapy, topical medications, oral pharmaceutical therapy, sexual counseling by a trained nurse, sacral neuromodulation, and laser treatment or surgery. Older age (>30) and frequent (≥ 6) outpatient clinic visits associated with a significantly minor reduction in NRS ($p = .03$ and $p = .04$, respectively).

CONCLUSIONS:

The results of this retrospective study suggest that an effective, multimodality-based treatment is most beneficial for VD patients and VD at older age may represent a subtype more resistant to therapy.

Maternal weight and children's behavior**Maternal Prepregnancy Weight and Children's Behavioral and Emotional Outcomes**

Julianna Dearnorff, PhD Louisa H. Smith, MS Lucia Petito, MA Hyunju Kim, MPH Barbara F. Abrams, DrPH

DOI: <http://dx.doi.org/10.1016/j.amepre.2017.05.013>

Introduction

This study investigated associations between maternal prepregnancy BMI and child behaviors at ages 9–11 years and examine interaction by race and gender.

Methods

The National Longitudinal Survey of Youth and the Children and Young Adults surveys are U.S.-based, ongoing longitudinal studies, initiated in 1979 and 1986, respectively. Mothers ($n=2,952$) reported pregnancy and child ($n=5,660$) developmental information at multiple time points. Child total, internalizing, and externalizing problems at ages 9–11 years were assessed using the Behavior Problems Index (BPI), collected biennially until 2012. Associations between prepregnancy BMI and child BPI outcomes were examined, as well as two- and three-way interactions by race and gender. Analyses were conducted in 2017.

Results

Boys whose mothers had higher prepregnancy weights exhibited higher total BPI and externalizing scores at ages 9–11 years versus those with normal-weight mothers. Boys with severely obese mothers had higher total BPI (mean difference=7.99, 95% CI=3.53, 12.46) and externalizing (mean difference=5.77, 95% CI=1.50, 10.04) scores. Prepregnancy underweight was associated with boys' higher total BPI (mean difference=2.34, 95% CI=0.02, 4.66) and externalizing (mean difference=3.30, 95% CI=0.69, 5.91); these associations were not significant in sensitivity analyses. No associations emerged for girls or internalizing problems. Two-way interactions by race and three-way interactions by race and gender were not significant.

Conclusions

Maternal prepregnancy weight was associated with BPI level among boys. Boys with severely obese mothers exhibited markedly higher behavioral problems at ages 9–11 years versus those with normal-weight mothers, regardless of race. Maintaining healthy prepregnancy weight may be important for preventing boys' deleterious behavior outcomes in middle childhood.

Low calcium

J Nutr. 2017 Jul 12. pii: jn251520. doi: 10.3945/jn.117.251520.

Low Calcium Intake in Midpregnancy Is Associated with Hypertension Development within 10 Years after Pregnancy: The Norwegian Mother and Child Cohort Study.

Egeland GM^{1,2}, Skurtveit S³, Sakshaug S³, Daltveit AK^{4,2}, Vikse BE^{5,6}, Haugen M².

Background: Low dietary calcium intake may be a risk factor for hypertension, but studies conflict.

Objective: We evaluated the ability to predict hypertension within 10 y after delivery based on calcium intake during midpregnancy.

Methods: The Norwegian Mother and Child Cohort Study of women delivering in 2004-2009 was linked to the Norwegian Prescription Database (2004-2013) to ascertain antihypertensive medication usage >90 d after delivery. Women with hypertension before pregnancy were excluded, leaving 60,027 mothers for analyses. Age and energy-adjusted cubic splines evaluated dose-response curves, and Cox proportional hazard analyses evaluated HR and 95% CIs by calcium quartiles adjusting for 7 covariates. Analyses were stratified by gestational hypertension and by sodium-to-potassium intake ratio (<0.76 compared with ≥0.76).

Results: Participants had a mean ± SD age of 30.5 ± 4.6 y, a body mass index (in kg/m²) of 24.0 ± 4.3 before pregnancy, and a mean follow-up duration of 7.1 ± 1.6 y. Cubic spline graphs identified a threshold effect of low calcium intake only within the range of dietary inadequacy related to increased risk. The lowest calcium quartile (≤738 mg/d; median: 588 mg/d), relative to the highest quartile (≥1254 mg/d), had an HR for hypertension of 1.34 (95% CI: 1.05, 1.70) among women who were normotensive during pregnancy, and an HR of 1.62 (95% CI: 1.14, 2.35) among women who had gestational hypertension, after adjusting for covariates. Women with gestational hypertension, who were in the lowest quartile of calcium intake, and who had a high sodium-to-potassium intake ratio had a risk of hypertension more than double that of their counterparts with a calcium intake in the highest quartile. Results were attenuated by adjusting for covariates (HR: 1.92; 95% CI: 1.09, 3.39).

Conclusions: The results suggest that low dietary calcium intake may be a risk factor or risk marker for the development of hypertension, particularly for women with a history of gestational hypertension

8. VISCERA

Diet and IBS

Neurogastroenterol Motil. 2017 Jul 17. doi: 10.1111/nmo.13151.

Habitual diet and diet quality in Irritable Bowel Syndrome: A case-control study.

Tigchelaar EF^{1,2}, Mujagic Z^{2,3}, Zhernakova A^{1,2}, Hesselink MAM³, Meijboom S⁴, Perenboom CWM⁴, Masclee AAM³, Wijmenga C^{1,2}, Feskens EJM^{2,4}, Jonkers DMAE^{2,3}.

BACKGROUND:

Diet is considered to be a key factor in symptom generation in Irritable Bowel Syndrome (IBS) and patients tend to exclude food products from their diet in pursue of symptom relief, which may impair diet quality.

METHODS:

We evaluated habitual dietary intake in IBS patients with regard to nutrients and food products using an extensive food frequency questionnaire. One hundred ninety-four IBS patients were compared to 186 healthy controls using multiple logistic regression analysis. An overall diet quality score was calculated for each participant based on the criteria of the Dutch Healthy Diet (DHD) index.

KEY RESULTS:

A lower DHD-score was found for IBS (mean [SD]: 52.9 [9.6]) vs controls (55.1 [9.2], P=.02). The diet of patients was lower in fibers (21 g vs 25 g per day, P=.002) and fructose (14 g vs 16 g, P=.033), while higher in total fat (37% vs 36% of total energy intake, P=.010) and added sugars (46 g vs 44 g, P=.029). Differences in daily intake of food products included lower consumption of apples (40 g vs 69 g, P<.001), pasta (28 vs 37 g, P=.029) and alcoholic beverages (130 g vs 193 g, P=.024) and higher consumption of processed meat (38 g vs 29 g, P<.001). Some of these findings correlated with gastrointestinal symptoms, showing differences between IBS subtypes.

CONCLUSIONS AND INFERENCES:

Differences in habitual diet were described, showing lower diet quality in IBS patients compared to controls, with increased consumption of fat and lower intake of fibers and fructose. Our data support the importance of personalized and professional nutritional guidance of IBS patients.

FODMAP diet

Neurogastroenterol Motil. 2017 Jul 14. doi: 10.1111/nmo.13154.

Long-term impact of the low-FODMAP diet on gastrointestinal symptoms, dietary intake, patient acceptability, and healthcare utilization in irritable bowel syndrome.

O'Keeffe M¹, Jansen C¹, Martin L¹, Williams M², Seamark L², Staudacher HM¹, Irving PM^{1,3}, Whelan K^{1,3}, Lomer MC^{1,3}.

Abstract

BACKGROUND:

The low-FODMAP diet is a frequently used treatment for irritable bowel syndrome (IBS). Most research has focused on short-term FODMAP restriction; however, guidelines recommend that high-FODMAP foods are reintroduced to individual tolerance. This study aimed to assess the long-term effectiveness of the low-FODMAP diet following FODMAP reintroduction in IBS patients.

METHODS:

Patients with IBS were prospectively recruited to a questionnaire study following completion of dietitian-led low-FODMAP education. At baseline and following FODMAP restriction (short term) only, gastrointestinal symptoms were measured as part of routine clinical care. Following FODMAP reintroduction, (long term), symptoms, dietary intake, acceptability, food-related quality of life (QOL), and healthcare utilization were assessed. Data were reported for patients who continued long-term FODMAP restriction (adapted FODMAP) and/or returned to a habitual diet (habitual).

KEY RESULTS:

Of 103 patients, satisfactory relief of symptoms was reported in 12% at baseline, 61% at short-term follow-up, and 57% at long-term follow-up. At long-term follow-up, 84 (82%) patients continued an 'adapted FODMAP' diet (total FODMAP intake mean 20.6, SD 14.9 g/d) compared with 19 (18%) of patients following a 'habitual' diet (29.4, SD 22.9 g/d, $P=.039$). Nutritional adequacy was not compromised for either group. The 'adapted FODMAP' group reported the diet cost significantly more than the 'habitual' group ($P<.001$) and affected social eating ($P<.01$) but there was no effect on food-related QOL. Healthcare utilization was similar between both groups.

CONCLUSION AND INFERENCES:

Low-FODMAP education is effective for long-term IBS management, enables a nutritionally adequate diet, and is broadly acceptable to patients.

Low birth weight and increased risk of CV disease

Relation of birth weight and the double product in childhood, adolescence and adulthood (From the Bogalusa Heart Study)

The American Journal of Cardiology

Wang F, et al.

Birth weight was assumed to be associated with blood pressure–heart rate product (double product, DP), an index of oxygen consumption and workload of the heart, at different ages. In this current study, this presumption was tested and, findings reported an association between birth weight and increased DP beginning in childhood, which may partly mediated the link between low birth weight and increased cardiovascular risk later in life.

Methods

- In this study, researchers studied resting heart rate, blood pressure, and birth weight data available in 2,340 children (4-11 years), 1,621 adolescents (12-19 years), and 2,315 adults (20-52 years) from the Bogalusa Heart Study (total n=6,276).

Results

- Findings demonstrated that after adjustment for age, sex, race, and body mass index, gestational age-adjusted birth weight was inversely associated with DP, with per 100 gram decrease in birth weight associated with an increase of 12.8, 22.9, and 23.2 beats/min×mmHg in DP in children ($p=0.016$), adolescents ($p=0.0007$), and adults ($p=0.0006$), respectively.
- Researchers observed an amplifying trend of the association with age in the total sample ($P=0.002$).

IBS childhood vs adult

Eur J Gastroenterol Hepatol. 2017 Aug;29(8):926-931. doi: 10.1097/MEG.0000000000000896.

Prevalence of intestinal complications in inflammatory bowel disease: a comparison between paediatric-onset and adult-onset patients.

Herzog D¹, Fournier N, Buehr P, Rueger V, Koller R, Heyland K, Nydegger A, Braegger CP; Swiss IBD Cohort Study Group.

INTRODUCTION:

Intestinal complications in inflammatory bowel disease indicate active inflammation and typically result in the intensification of therapy.

AIM:

To analyse whether the rates of intestinal complications were associated with age at disease onset.

PATIENTS AND METHODS:

Data from 1506 individuals with Crohn's disease (CD) and 1201 individuals with ulcerative colitis (UC) were obtained from the Swiss inflammatory bowel disease cohort study database, classified into groups on the basis of age at diagnosis (<10, <17, <40 and >40 years of age), and retrospectively analysed.

RESULTS:

In CD patients, the rates of stricturing (29.1-36.2%), abdominal penetrating disease (11.9-18.2%), resectional surgery (17.9-29.8%) and perianal disease (14.7-34.0%) were correlated with disease duration, but not age at diagnosis. However, paediatric-onset CD was associated with higher rates of multiple, rectal and anal strictures and earlier colon surgery. In addition, perianal disease occurred earlier, required earlier surgical intervention, and was more often combined with stricturing and penetrating disease. Finally, anal fissures were more prevalent among younger patients. In UC patients, the rates of progression or extension of disease (0-25.8%) and colectomy (3.0-8.7%) were dependent on disease duration, but not age at disease onset. Paediatric-onset disease was associated with a higher rate of extensive colitis at diagnosis and earlier progression or extension of disease, and nonsurgically treated patients with the youngest ages at onset more frequently required antitumour necrosis factor- α treatments.

CONCLUSION:

The higher rates of intestinal complications, including those of the small and large bowel and in the anal region, in paediatric-onset CD patients point towards a level of inflammation that is more difficult to control. Similar findings were also evident in UC patients.

10 A. CERVICAL SPINE**Variation of ROM**

Arch Phys Med Rehabil. 2017 Jul;98(7):1407-1434. doi: 10.1016/j.apmr.2016.10.003. Epub 2016 Oct 27.

To What Degree Does Active Cervical Range of Motion Differ Between Patients With Neck Pain, Patients With Whiplash, and Those Without Neck Pain? A Systematic Review and Meta-Analysis.

Stenneberg MS¹, Rood M², de Bie R³, Schmitt MA⁴, Cattrysse E⁵, Scholten-Peeters GG⁶.

OBJECTIVES:

To quantify differences in active cervical range of motion (aCROM) between patients with neck pain and those without neck pain, in patients with whiplash-associated disorders (WADs) and nontraumatic neck pain, and in patients with acute complaints versus those with chronic complaints.

DATA SOURCES:

Seven bibliographic databases were searched from inception to April 2015. In addition, a manual search was performed.

STUDY SELECTION:

Full articles on a numerical comparison of aCROM in patients with neck pain and asymptomatic control persons of similar ages were included. Two reviewers independently selected studies and assessed risk of bias.

DATA EXTRACTION:

Two reviewers extracted the data. Pooled mean differences of aCROM were calculated using a random-effects model.

DATA SYNTHESIS:

The search yielded 6261 hits; 27 articles (2366 participants, 13 low risk of bias) met the inclusion criteria. The neck pain group showed less aCROM in all movement directions compared with persons without neck pain. Mean differences ranged from -7.04° (95% CI, -9.70° to -4.38°) for right lateral bending (11 studies) to -89.59° (95% CI, -131.67° to -47.51°) for total aCROM (4 studies). Patients with WADs had less aCROM than patients with nontraumatic neck pain. No conclusive differences in aCROM were found between patients with acute and patients with chronic complaints.

CONCLUSIONS:

Patients with neck pain have a significantly decreased aCROM compared with persons without neck pain, and patients with WADs have less aCROM than those with nontraumatic neck pain.

US size of muscles shows strength

Am J Phys Med Rehabil. 2017 Jun 21. doi: 10.1097/PHM.0000000000000778.

Are Ultrasonographic Measures of Cervical Flexor Muscles Correlated With Flexion Endurance in Chronic Neck Pain and Asymptomatic Participants?

Ghamkhar L¹, Kahlaee AH.

OBJECTIVE:

This study compared the relationship between some clinical factors and the size of neck flexors in participants with or without chronic neck pain.

DESIGN:

In this case-control study, the correlation between flexor endurance capacity as well as thickness, cross-section area, and shape ratio of longus colli/capitis and sternocleidomastoid muscles were examined in 30 patients with chronic neck pain and 30 asymptomatic participants.

RESULTS:

The patients showed lower flexor endurance ($P = 0.02$), smaller thickness ($P = 0.03$), and cross-section area ($P < 0.01$) of longus colli as compared with controls. Longus capitis and sternocleidomastoid size were not different between the two groups. The flexor endurance showed a negative correlation with longus colli shape ratio ($r = -0.38$, $P = 0.03$) and a positive correlation with longus capitis cross-section area ($r = 0.38$, $P = 0.03$) in the patients with chronic neck pain. In the control group, flexor endurance was negatively correlated with longus colli shape ratio ($r = -0.45$, $P = 0.01$) but positively correlated with longus capitis thickness ($r = 0.45$, $P = 0.01$) and cross-section area ($r = 0.38$, $P = 0.03$). Neck disability and pain intensity indices were not significantly correlated with either flexor muscles endurance or size.

CONCLUSIONS:

The ultrasonographic measures of the deep neck flexor muscles and the flexor endurance test, being associated with each other, could successfully differentiate patients with chronic neck pain from asymptomatic participants. However, the endurance test scores were not correlated with self-reported disability or pain intensity indices.

10 B. CERVICAL EXERCISES**Neck and scapula exercise helpful**

J Sport Rehabil. 2017 Jun 12:1-28. doi: 10.1123/jsr.2017-0024.

Neck and Scapula-focused Exercise Training on Patients with Non-Specific Neck Pain: A Randomized Controlled Trial.

Yildiz TI¹, Turgut E¹, Duzgun I¹.

OBJECTIVES:

The purpose of this study was to investigate the effects of additional 6-week scapular stabilization training in patients with non-specific neck pain (NNP).

MATERIALS AND METHOD:

Thirty patients with non-specific neck pain were randomly allocated to the study. Fifteen participants in the intervention group (IG) received neck-focused exercise and scapular stabilization training while 15 participants in the control group (CG) received neck-focused exercise training. All groups were evaluated at baseline and after 6-week rehabilitation. The pain intensity on the neck was measured with the Visual Analog Scale (VAS). The self-reported disability status was measured with the Neck Disability Index (NDI). 3-dimensional scapular kinematics were recorded during dynamic shoulder elevation trials with using electromagnetic tracking device and data were further analyzed at 30°, 60°, 90°, and 120° of humerothoracic elevations.

RESULTS:

Comparisons revealed that regardless of the received treatment, after 6-week training both groups revealed significant improvements in VAS ($p < 0.001$) and NDI ($p < 0.001$) score. Both VAS and NDI outcomes had large effect size of ($r = 0.618$), ($r = 0.619$) respectively. For scapular kinematics, there were no group differences especially for scapular upward-downward rotation and anterior-posterior tilt ($p > 0.05$). However, in the IG group, the scapula was more externally rotated at 120° degree humerothoracic elevation ($p = 0.04$).

CONCLUSION:

Findings of this study showed that both manual therapy and active interventions including neck-focused exercise and scapular stabilization training are effective in decreasing pain and disability level in patients with NNP. More comprehensive studies with longer follow-up durations are needed to better understand the potential effects of scapular stabilization training in patients with NNP

12 A. WHIPLASH**Association between**

Clin J Pain. 2017 Jul 3. doi: 10.1097/AJP.0000000000000532.

Association between Clinical and Neurophysiological Outcomes in Patients with Mechanical Neck Pain and Whiplash-associated Disorders.

Castaldo M¹, Catena A, Chiarotto A, Villafañe JH, Fernández-de-Las-Peñas C, Arendt-Nielsen L.

OBJECTIVES:

To investigate the association between pain, disability, trigger points (TrPs) and pressure pain thresholds (PPTs) in patients with mechanical (MNP) or whiplash-associated disorders (WAD).

METHODS:

Forty-six MNP and fifty-one WAD patients underwent a physical examination consisting of cervical range of motion, PPTs in the upper trapezius and tibialis anterior muscles, TrPs examination in the upper trapezius, and collection of clinical data including disability, pain intensity and spontaneous symptomatic pain area.

RESULTS:

A significantly moderate positive association between pain and disability was found in both groups ($P < 0.01$). Significantly negative associations between pain intensity and PPT in the upper trapezius ($P = 0.008$ and $P = 0.041$), pain and PPT in tibialis anterior ($P = 0.015$ and $P = 0.038$), disability and PPT in upper trapezius (both, $P = 0.006$) were also found in both MNP and WAD groups. Individuals with MNP showed significantly positive association between pain area and disability ($P = 0.034$) and negative association between disability and PPT in the tibialis anterior ($P = 0.003$). Patients with active TrPs in the upper trapezius exhibited higher intensity of neck pain, higher neck disability and lower PPTs than those with latent TrPs in upper trapezius in both groups.

DISCUSSION:

The association between pain, disability, and PPTs is common in subjects with neck pain regardless of the origin of neck pain. The presence of active TrPs was related to higher pain intensity and related-disability and lower PPTs

12 B. CERVICAL SURGERIES

Fusion and strain

J Clin Neurosci. 2017 Jun 27. pii: S0967-5868(16)31551-X. doi: 10.1016/j.jocn.2017.06.001.

Restrictions of cervical flexion after laminoplasty increase in the mechanical stress at the occipitocervical junction in non-rheumatoid arthritis patients.

Dohzono S¹, Toyoda H², Takahashi S³, Suzuki A³, Terai H³, Nakamura H³.

Increased range of motion (ROM) at O-C2 after cervical laminoplasty is thought to be a compensatory change due to loss of cervical ROM after surgery.

Retro-odontoid pseudotumor in non-RA patients is also caused by loss of ROM at C2-C7 causing mechanical stress on upper cervical spine. The aim of this study was to measure the occipitocervical alignment before and after cervical laminoplasty, and examine the factors associated with postoperative retro-odontoid soft tissue (ROST) enlargement. The study comprised 72 non-RA patients (51 males and 21 females, mean age 65.2years) who underwent cervical laminoplasty. The cervical angles (O-C1, O-C2, C1-C2, and C2-C7) were measured and ROST thickness was evaluated on mid-sagittal T1-weighted MRI before surgery and 2years after surgery. Correlations between radiographic changes and postoperative ROST enlargement were examined. The results shows that postoperative ROM and kyphotic angle in flexion position at O-C2 significantly increased, and postoperative ROM and kyphotic angle in flexion position at C2-C7 significantly decreased compared with preoperative values. On stepwise multiple regression analysis, age (beta=0.273, p<0.01) and restriction of cervical flexion postoperatively (beta=0.235, p<0.01) were independently associated with ROST enlargement. In conclusion, occipitocervical ROM increased and C2-C7 ROM, especially C2-C7 kyphotic angle in flexion, reduced after cervical laminoplasty. The ROST enlargement was associated with reduction in cervical flexion.

These results indicate that preservation of cervical ROM, especially kyphotic angle in flexion, after cervical laminoplasty contribute to reduction of mechanical stress at the occipitocervical junction.

Fusion

Spine (Phila Pa 1976). 2017 Jul 15;42(14):E825-E832. doi: 10.1097/BRS.0000000000001979.

Improvements in Neck and Arm Pain Following an Anterior Cervical Discectomy and Fusion.

Massel DH¹, Mayo BC, Bohl DD, Narain AS, Hijji FY, Fineberg SJ, Louie PK, Basques BA, Long WW, Modi KD, Singh K.

STUDY DESIGN:

A retrospective analysis.

OBJECTIVE:

The aim of this study was to quantify improvements in Visual Analogue Scale (VAS) neck and arm pain, Neck Disability Index (NDI), and Short Form-12 (SF-12) Mental (MCS) and Physical (PCS) Composite scores following an anterior cervical discectomy and fusion (ACDF).

SUMMARY OF BACKGROUND DATA:

ACDF is evaluated with patient-reported outcomes. However, the extent to which these outcomes improve following ACDF remains poorly defined.

METHODS:

A surgical registry of patients who underwent primary, one- or two-level ACDF during 2013 to 2015 was reviewed. Comparisons of VAS neck and arm, NDI, and SF-12 MCS and PCS scores were performed using paired t tests from preoperative to each postoperative time point. Analysis of variance (ANOVA) was used to estimate the reduction in neck and arm pain over the first postoperative year. Subgroup analyses were performed for patients with predominant neck (pNP) or arm (pAP) pain, as well as for one- versus two-level ACDF.

RESULTS:

Eighty-nine patients were identified. VAS neck and arm, NDI, and SF-12 PCS improved from preoperative scores at all postoperative time points ($P < 0.05$ for each). Across the first postoperative year, patients reported a 2.7-point (44.2%) reduction in neck and a 3.1-point (54.0%) reduction in arm pain ($P < 0.05$ for each). Sixty-one patients with pNP and 28 patients with pAP reported reductions in neck and arm pain over the first 6 months and 12 weeks postoperatively, respectively ($P < 0.05$ for each). Patients who underwent one-level ACDFs experienced a 47.2% reduction in neck pain and 55.1% reduction in arm pain over the first postoperative year ($P < 0.05$ for each), while those undergoing two-level ACDF experienced 39.7% and 49.2% for neck and arm, respectively ($P < 0.05$ for each).

CONCLUSION:

This study suggests that patients experience significant improvements in neck and arm pain following ACDF regardless of presenting symptom. In addition, patients undergoing one-level ACDF report greater reductions in neck and arm pain than patients undergoing two-level fusion.

13. CRANIUM/TMJ**Midpalatal suture****Cone beam computed tomography evaluation of midpalatal suture maturation in adults**

F. Angelieri L. Franchi L.H.S. Cevidanes J.R. Gonçalves M. Nieri L.M. Wolford ,
J.A. McNamara Jr.

DOI: <http://dx.doi.org/10.1016/j.ijom.2017.06.021>

Abstract

The aim of this study was to evaluate midpalatal suture maturation in adults, as observed in cone beam computed tomography (CBCT) images. CBCT scans from 78 subjects (64 female and 14 male, age range from 18 to 66 years) were evaluated.

Midpalatal suture maturation was verified on the central cross-sectional axial slice in the superior–inferior dimension of the palate, using methods validated previously. Intra-examiner agreement was analyzed by weighted kappa test.

Multinomial logistic regression was used to test whether sex and chronological age (adults <30 years or ≥ 30 years) could be used as a predictor for the maturational stages of the midpalatal suture. The majority of the adults presented a fused midpalatal suture in the palatine (stage D) and/or maxillary bones (stage E). However, the midpalatal suture was not fused in 12% of the subjects. Sex and chronological age were not significant predictors of the maturational stages of the midpalatal suture.

The individual assessment of midpalatal suture maturation by way of CBCT images may provide reliable information critical to making the clinical decision between rapid maxillary expansion and surgically assisted rapid maxillary expansion for the treatment of maxillary atresia in adults.

TMJ arthritis

Community Dent Oral Epidemiol. 2017 Jul 12. doi: 10.1111/cdoe.12312.

Occurrence of signs of osteoarthritis/arthrosis in the temporomandibular joint on panoramic radiographs in Swedish women.

Bäck K¹, Ahlqwist M², Hakeberg M¹, Dahlström L¹.

OBJECTIVES:

To determine the prevalence and incidence of radiographic signs of osteoarthritis/osteoarthrosis (OA) in the temporomandibular joint (TMJ) among middle-aged and older women.

METHODS:

Data were collected from ongoing representative, longitudinal and repeated cross-sectional studies in Gothenburg, Sweden. Panoramic radiographs (PAN) have been taken regularly since 1968. The cohorts were systematically selected from the female population at the ages of 38, 50, 62 and 74. Condylar alterations indicative of OA (flattening/osteophyte/erosion) were evaluated in a total of 5234 PANs by one examiner under standardized conditions. Intra-examiner reliability was good. Sensitivity was poor, and specificity was acceptable in relation to computed tomography.

RESULTS:

The prevalence of signs of OA in the TMJ was 18% on panoramic radiographs at the age of 38, gradually increasing with age. At the age of 62, the prevalence was 38%, and it was stable around 45% in the older age groups. The highest incidence rate of OA was between the ages of 55 and 65. Bilateral OA was uncommon. Flattening was the most prominent finding.

CONCLUSION:

The prevalence of signs of OA in the TMJ, including remodeling, evaluated on panoramic radiographs in representative cohorts of women, increases substantially with age. Around one in every five middle-aged women and almost every second woman of older ages can be expected to have some radiographic alteration in the TMJ. The highest proportion with new findings of OA is to be found among older middle-aged women.

16. CONCUSSIONS

Physical changes secondary to concussions

Med Sci Sports Exerc. 2017 Jul 13. doi: 10.1249/MSS.0000000000001372.

Self-reported Concussion History and Sensorimotor Tests Predict Head/Neck Injuries.

Hides JA¹, Franettovich Smith MM, Mendis MD, Treleaven J, Rotstein AH, Sexton CT, Low Choy N, McCrory P.

PURPOSE:

Sports related concussion (SRC) is a risk for players involved in high impact, collision sports. A history of SRC is a risk factor for future concussions, but the mechanisms underlying this are unknown. Despite evidence that most visible signs and symptoms associated with sports concussion resolve within 7-10 days, it has been proposed that subclinical loss of neuromuscular control and impaired motor functioning may persist and be associated with further injury. Alternatively, indicators of poor sensorimotor performance could be independent risk factors. This study investigated if a history of SRC and/or pre-season sensorimotor performance predicted season head/neck injuries.

METHODS:

190 male rugby league, rugby union and Australian Football League players participated. Pre-season assessments included self-report of SRC within the previous 12 months and a suite of measures of sensorimotor function (balance, vestibular function, cervical proprioception and trunk muscle function). Head/neck injury data were collected in the playing season.

RESULTS:

Forty-seven players (25%) reported a history of SRC. A history of concussion was related to changes in size and contraction of trunk muscles. Twenty-two (11.6%) players sustained a head/neck injury during the playing season, of which, 14 (63.6%) players had a previous history of SRC. Predictors of in-season head/neck injuries included history of SRC, trunk muscle function and cervical proprioceptive errors. Five risk factors were identified and players with three or more of these had 14 times greater risk of sustaining a season neck/head injury (sensitivity of 75% and specificity of 82.5%) than players with 2 or fewer risk factors.

CONCLUSION:

The modifiable risk factors identified could be used to screen football players in the pre-season and guide development of exercise programs aimed at injury reduction.

17. SHOULDER GIRDLE

Pull of upper traps and rhomboids

J Phys Ther Sci. 2017 Jun; 29(6): 1043–1044.
. doi: 10.1589/jpts.29.1043

Effects of pulling direction on upper trapezius and rhomboid muscle activity

Won-gyu Yoo¹

[Purpose] This study examined the activation of the rhomboid muscle according to the angle of the arm.

[Subjects and Methods] The current study was conducted on 15 healthy males. The participants performed the pulling exercise in 5 conditions. The surface electromyography system was used to measure the muscle activities of the rhomboid and upper trapezius.

[Results] The activity of the upper trapezius in condition 5 was significantly increased compared to that in condition 4. The activity of the rhomboid in condition 4 was significantly increased compared to that in conditions 1 and 5.

[Conclusion] This study showed that performing a pulling exercise with the arms raised above the head (shoulder flexion at 120°) is more effective for reducing upper trapezius tension, while also selectively strengthening the rhomboid muscle.

Keywords: Electromyography, Rhomboid, Upper trapezius PMID: PMC5468195

21. ADHESIVE CAPSULITIS

Means of identifying

Arch Phys Med Rehabil. 2017 Jul 4. pii: S0003-9993(17)30448-3. doi: 10.1016/j.apmr.2017.06.006.

Do the Findings of Magnetic Resonance Imaging, Arthrography, and Ultrasonography Reflect Clinical Impairment in Patients with Idiopathic Adhesive Capsulitis of the Shoulder?

Park GY¹, Park JH², Kwon DR¹, Kwon DG¹, Park J³.

OBJECTIVE:

To investigate the correlation between arthrography, magnetic resonance imaging (MRI), and ultrasonography (US) findings in patients with idiopathic adhesive capsulitis (IAC) of the shoulder and their clinical presentation as well as functional impairment.

DESIGN:

Cross-sectional observational study.

SETTING:

Institutional practice.

PARTICIPANTS:

Seventy-five patients with a clinical diagnosis of unilateral IAC.

INTERVENTION:

Contrast-enhanced MRI, single-contrast arthrography, and US were performed in all patients.

MAIN OUTCOME MEASURES:

The thickness of axillary recess, coracohumeral ligament (CHL), and the enhanced portion in the rotator cuff interval were measured by using MRI. Arthrography was used to calculate the total score of shoulder arthrographic criteria. US was used to measure the thickness of the inferior glenohumeral ligament (IGHL) and CHL, and the IGHL ratio and CHL ratio were calculated by comparing with the unaffected side.

RESULTS:

None of MRI parameters was correlated with clinical assessment scores. The total score of shoulder arthrographic criteria was negatively correlated with passive range of motion (PROM) of the total shoulder motion ($p < 0.05$), shoulder forward flexion ($p < 0.05$), and abduction ($p < 0.05$). The total CMS score was well correlated with the total score of shoulder arthrographic criteria ($p < 0.05$). The total shoulder joint space capacity was positively correlated with PROM of the total shoulder motion ($p < 0.05$), and shoulder forward flexion ($p < 0.05$). The IGHL thickness, IGHL ratio, CHL thickness, and CHL ratio were negatively correlated with the shoulder external rotation ($p < 0.05$), respectively.

CONCLUSIONS:

The findings of arthrography and US in patients with IAC of the shoulder were correlated with the clinical assessment scores, whereas all measuring parameters on MRI were not. US is recommended as the preferred option for diagnosing IAC of the shoulder because it is non-invasive, reflects the clinical features of IAC, and provides anatomic accuracy.

27. HIP**Abdominal fat and hip fx risk**

Osteoporos Int. 2017 Jul 12. doi: 10.1007/s00198-017-4142-9.

Abdominal obesity and risk of hip fracture: a meta-analysis of prospective studies.

Li X¹, Gong X², Jiang W³.

We conducted a meta-analysis to qualitatively summarize the evidence of the association between abdominal obesity and hip fracture risk. The results indicated that abdominal obesity as measured by waist circumference and waist-hip ratio might be associated with an increased risk of hip fracture.

INTRODUCTION:

Epidemiological investigations evaluating the association of abdominal obesity with hip fracture risk have yielded conflicting results. Therefore, a meta-analysis was conducted to qualitatively summarize the evidence of the associations between waist circumference, waist-hip ratio, and hip circumference and the risk of hip fracture, respectively.

METHODS:

PubMed, Embase, and Web of Science were searched for relevant articles published up to March 2017. Pooled relative risks (RRs) with 95% confidence intervals (CIs) were calculated with a random-effects model. Dose-response relationship was assessed by restricted cubic spline.

RESULTS:

Seven studies involving 180,600 participants for hip circumference, six studies involving 199,828 participants for waist-hip ratio, and five studies involving 170,796 participants for waist circumference were finally included in this meta-analysis. The combined RRs with 95% CIs of hip fracture for the highest versus lowest category of waist circumference, waist-hip ratio, and hip circumference were 1.58 (95% CI 1.20-2.08), 1.32 (95% CI 1.15-1.52), and 0.87 (95% CI 0.74-1.02), respectively. For dose-response analysis, a nonlinear relationship was found ($P_{\text{nonlinearity}} < 0.001$) between waist circumference and the risk of hip fracture, and a linear relationship ($P_{\text{nonlinearity}} = 0.911$) suggested that the risk of hip fracture increased about 3.0% (1.03 (1.01-1.04)) for each 0.1 unit increment of waist-hip ratio.

CONCLUSIONS:

This meta-analysis suggested that abdominal obesity as measured by waist circumference and waist-hip ratio might be associated with an increased risk of hip fracture. From a public health perspective, indicators of abdominal obesity may be usable predictors of hip fracture risk.

30 A. IMPINGEMENT**Mental health scores****Preoperative Symptoms in Femoroacetabular Impingement Patients Are More Related to Mental Health Scores than the Severity of Labral Tear or Magnitude of Bony Deformity**

Cale A. Jacobs, PhD, ATC Jeremy M. Burnham, MD Kate N. Jochimsen, MS, ATC
Domingo Molina IV, MD David Hamilton, MD Stephen T. Duncan, MD

DOI: <http://dx.doi.org/10.1016/j.arth.2017.06.053>

Abstract**Background**

The purpose of this study was to determine the relationships between patient factors, mental health status, the condition of the local tissue, magnitude of bony deformity, and preoperative symptoms in a series of femoroacetabular impingement (FAI) patients.

Methods

From our single-surgeon, prospective outcomes registry, we identified 64 patients with arthroscopically-treated labral tears and cam deformities. We assessed the correlations between patient factors (age, sex, BMI, level of education), surgical findings (size of labral tear, presence of chondral lesions), mental health factors (VR-12 Mental Component Score (MCS), depression, and preoperative use of psychotropic and/or opioid drugs), magnitude of FAI deformity (alpha and lateral center edge angles) and preoperative Hip dysfunction and Osteoarthritis Outcome Score (HOOS) subscales. Patient factors, surgical and radiographic findings, and preoperative HOOS scores were then compared between patients with low and high MCS.

Results

Neither hip pathology nor patient-related factors significantly correlated with HOOS scores. On the contrary, MCS significantly correlated with HOOS Symptom ($\rho=0.45$, $p<0.001$) and Pain Scores ($\rho=0.52$, $p<0.001$). Low MCS patients had significantly lower preoperative scores for all five HOOS subscales ($p\leq 0.002$) and more frequent chondral lesions and comorbid depression ($p\leq 0.01$).

Conclusion

Symptom severity was significantly more related to mental health status than either the size of labral tear or FAI deformity. Patients with low MCS had significantly worse preoperative pain and self-reported function, and a greater prevalence of concomitant chondral lesions. Future studies are necessary to determine if earlier surgical treatment or preoperative psychological and/or pain coping interventions may improve outcomes for those with low mental health scores

PT helps post surgery

BMJ Open. 2017 Jun 23;7(6):e014658. doi: 10.1136/bmjopen-2016-014658.

Efficacy of adding a physiotherapy rehabilitation programme to arthroscopic management of femoroacetabular impingement syndrome: a randomised controlled trial (FAIR).

Bennell KL¹, Spiers L¹, Takla A², O'Donnell J³, Kasza J⁴, Hunter DJ^{5,6}, Hinman RS¹.

OBJECTIVES:

Although several rehabilitation programmes following hip arthroscopy for femoroacetabular impingement (FAI) syndrome have been described, there are no clinical trials evaluating whether formal physiotherapy-prescribed rehabilitation improves recovery compared with self-directed rehabilitation. The objective of this study was to evaluate the efficacy of adding a physiotherapist-prescribed rehabilitation programme to arthroscopic surgery for FAI syndrome.

DESIGN:

Randomised controlled trial.

METHODS:

People aged ≥ 16 years with FAI syndrome scheduled for hip arthroscopy were recruited and randomly allocated to physiotherapy (PT) or control. The PT group received seven PT sessions (one preoperative and six postoperative) incorporating education, manual therapy and a progressive rehabilitation programme of home, aquatic and gym exercises while the control group did not undertake PT rehabilitation. Measurements were taken at baseline (2 weeks presurgery) and 14 and 24 weeks postsurgery. The primary outcomes were the International Hip Outcome Tool (iHOT-33) and the sport subscale of the Hip Outcome Score (HOS) at week 14.

RESULTS:

Due to slower than expected recruitment and funding constraints, recruitment was ceased after 23 months. Thirty participants (14 PT and 16 control) were randomised and 28 (14 PT and 14 control; 93%) and 22 (11 PT and 11 control; 73%) completed week 14 and 24 measurements, respectively. For the 14-week primary outcomes, the PT group showed significantly greater improvements on the iHOT-33 (mean difference 14.2 units; 95% CI 1.2 to 27.2) and sport subscale of the HOS (13.8 units; 95% CI 0.3 to 27.3). There were no significant between-group differences at week 24.

CONCLUSIONS:

An individual PT treatment and rehabilitation programme may augment improvements in patient-reported outcomes following arthroscopy for FAI syndrome. However, given the small sample size, larger trials are needed to validate the findings.

32 A. KNEE/ACL**MRI help**

Knee Surg Sports Traumatol Arthrosc. 2017 Jul 13. doi: 10.1007/s00167-017-4646-z.

Preoperative magnetic resonance imaging predicts eligibility for arthroscopic primary anterior cruciate ligament repair.

van der List JP¹, DiFelice GS².

PURPOSE:

To assess the role of preoperative magnetic resonance imaging (MRI) on the eligibility for arthroscopic primary anterior cruciate ligament (ACL) repair.

METHODS:

All patients undergoing ACL surgery between 2008 and 2017 were included. Patients underwent arthroscopic primary repair if sufficient tissue length and quality were present, or they underwent single-bundle ACL reconstruction. Preoperative MRI tear locations were graded with the modified Sherman classification: type I (>90% distal remnant length), type II (75-90%), or type III (25-75%). MRI tissue quality was graded as good, fair, or poor. Arthroscopy videos were reviewed for tissue length and quality, and final treatment.

RESULTS:

Sixty-three repair patients and 67 reconstruction patients were included. Repair patients had more often type I tears (41 vs. 4%, $p < 0.001$) and good tissue quality (89 vs. 12%, $p < 0.001$). Preoperative MRI tear location and tissue quality predicted eligibility for primary repair: 90% of all type I tears and 88% of type II tears with good tissue quality were repaired, while only 23% of type II tears with fair tissue quality, 0% of type II tears with poor tissue quality, and 14% of all type III tears could be repaired.

CONCLUSIONS:

This study showed that tear location and tissue quality on preoperative MRI can predict eligibility for arthroscopic primary ACL repair. These findings may guide the orthopaedic surgeon on the preoperative assessment for arthroscopic primary repair of proximal ACL tears.

34. PATELLA**Fat pad**

Arthritis Care Res (Hoboken). 2017 Jul 13. doi: 10.1002/acr.23326.

Relationship between knee pain and infra-patellar fat pad morphology - A within- and between-person analysis from the Osteoarthritis Initiative.

Steidle-Kloc E¹, Culvenor AG^{1,2}, Dörrenberg J¹, Wirth W¹, Ruhdorfer A¹, Eckstein F¹.

OBJECTIVE:

Inflammation is known to be strongly associated with knee pain in osteoarthritis. The infra-patellar fat pad represents a potential source of pro-inflammatory cytokines. Yet, the relationship between infra-patellar fat pad morphology and osteoarthritis symptoms is unclear.

METHODS:

Here we investigate quantitative imaging parameters of infra-patellar fat pad morphology between: a) painful vs. contralateral pain-free limbs of subjects with unilateral pain; and b) knees of patients with chronic knee pain vs. those of matched pain-free control subjects. 46 subjects with strictly unilateral frequent knee pain and bilateral radiographic osteoarthritis (Kellgren-Lawrence grade [KLG] 2/3) were drawn from the Osteoarthritis Initiative. Further, 43 subjects with chronic knee pain over 4 years and 43 matched pain-free controls without pain over this period were studied. Infra-patellar fat pad morphology (volume, surface area, depth) was determined by manual segmentation of sagittal magnetic resonance images.

RESULTS:

No significant differences in infra-patellar fat pad morphology were observed between painful vs. painless knees of persons with strictly unilateral knee pain (mean difference -0.7%; 95% confidence interval (CI) -0.6,0.9%; p=0.64) or between chronically painful knees vs. matched painless controls (-2.1%; 95% CI -2.2,1.1%; p=0.51).

CONCLUSION:

Independent of the ambiguous role of the IPFP in knee OA (a potential source of pro-inflammatory cytokines or a mechanical shock absorber), the size of the infra-patellar fat pad does not appear to be related to knee pain. This article is protected by copyright. All rights reserved.

Patella and Achilles tendons

Br J Sports Med. 2017 Jul 11. pii: bjsports-2016-097163. doi: 10.1136/bjsports-2016-097163.

Patellar and Achilles tendinopathies are predominantly peripheral pain states: a blinded case control study of somatosensory and psychological profiles.

Plinsinga ML¹, van Wilgen CP^{2,3,4}, Brink MS⁵, Vuvan V¹, Stephenson A¹, Heales LJ^{1,6}, Mellor R¹, Coombes BK⁷, Vicenzino BT¹.

STUDY DESIGN:

Case-control design.

BACKGROUND:

Tendinopathy is characterised by pain on tendon loading. In persistent cases of upper limb tendinopathy, it is frequently associated with central nervous system sensitisation, whereas less commonly linked in the case of persistent lower limb tendinopathies.

OBJECTIVES:

Compare somatosensory and psychological profiles of participants with persistent patellar (PT) and Achilles tendinopathies (AT) with pain-free controls.

METHODS:

A comprehensive battery of Quantitative Sensory Testing (QST) was assessed at standardised sites of the affected tendon and remotely (lateral elbow) by a blinded assessor. Participants completed the Victorian Institute of Sports Assessment, a health-related quality of life questionnaire, the Hospital Anxiety and Depression Scale and the Active Australia Questionnaire. Independent t-test and analysis of covariance (sex-adjusted and age-adjusted) were performed to compare groups.

RESULTS:

Participants with PT and AT did not exhibit differences from controls for the QST at the remote site, but there were differences at the affected tendon site. Compared with controls, participants with PT displayed significantly lower pressure pain threshold locally at the tendon ($p=0.012$) and fewer single limb decline squats before pain onset, whereas participants with AT only displayed fewer single heel raises before pain onset, but this pain was of a higher intensity.

CONCLUSION:

PT and AT appear to be predominantly local not widespread pain states related to loading of tendons without significant features of central sensitisation.

35. KNEE/TOTAL

Prior surgeries do not impact effect of total

Prior Knee Arthroscopy Does Not Influence Long-Term Total Knee Arthroplasty Outcomes and Survivorship

Anthony Viste, M.D, Ph.D Matthew P. Abdel, M.D Matthieu Ollivier, M.D Kristin C. Mara, M.S,
Aaron J. Krych, M.D Daniel J. Berry, M.D

DOI: <http://dx.doi.org/10.1016/j.arth.2017.06.052>

Abstract**Background**

Arthroscopic knee surgery frequently precedes total knee arthroplasty (TKA). There have been mixed data on the effect of prior arthroscopic surgery on results of TKA. The purpose of this study was to compare the 10-year Knee Society Score (KSS), survivorship, and complications of TKA in a cohort of patients who had a previous knee arthroscopy to a control cohort.

Methods

A retrospective review of 1315 TKAs who underwent a primary TKA between 2003 and 2004 was performed. Of these, 160 TKAs had previous arthroscopy (excluding ligamentous reconstruction). A matched cohort study 2:1 was carried out with a group of 320 controls (no prior surgery). Outcomes were assessed with the original Knee Society Score (KSS), range-of-motion (ROM), complications and survivorships. Mean follow-up was 9 years.

Results

The mean KSS increased from 36-84 in the arthroscopy group versus 35-86 in the control group ($p = 0.5$). The mean pre and postoperative ROM was not different between groups ($p=0.2$), like survivorship free of complication at 5 years (94.3% in the arthroscopy group versus 95.3% in the control; $p=0.7$) and infections in 2 controls versus 3 arthroscopy cases ($p=0.2$). The survivorships free of revision for aseptic loosening, revision for any reason, and reoperation were similar at 10 years (96.5%, 94.6%, and 89.2%, respectively, in the arthroscopy group versus 96.2%, 95.9%, and 91.5% in the control group).

Conclusion

There were no significant differences between both groups. These data are reassuring and valuable in an era in which many candidates for TKA will have had previous arthroscopic knee surgery.

40. ANKLE SPRAINS AND INSTABILITY

Taping and gait

J Phys Ther Sci. 2017 Jun; 29(6): 1040–1042. doi: 10.1589/jpts.29.1040 PMID: PMC5468194

Short-term effect of spiral taping on the pain and walking performance of individuals with chronic ankle instability

Chae-gil Lim, PT, PhD¹

[Purpose] This study was designed to investigate the effects of spiral taping (ST) on the pain and walking performance of individual with chronic ankle instability (CAI).

[Subjects and Methods] 12 men and 13 women (mean: 21.52 years; range: 20–31 years) with unilateral CAI (Cumberland ankle instability score: ≤ 24) were included. All the participants received 3 mm-wide ST. The latter was applied in a 3×4 cross shape onto the medial malleolus, the lateral malleolus, and the anterior talotibial joint of the unstable ankle. The pain and walking performance were measured on the visual analogue scale (VAS) and with a timed up and go test (TUGT) at the baseline and 30 minutes after the intervention.

[Results] VAS and TUGT scores were significantly improved after application of the ST.

[Conclusion] The results indicated that ST can improve the pain and walking performance of CAI individuals.

Keywords: Chronic ankle instability, Walking performance, Spiral taping

41 A. ACHILLES TENDON AND CALF**Impact of training**

Scand J Med Sci Sports. 2017 Jun 12. doi: 10.1111/sms.12930.

Impact of Rest Duration on Achilles Tendon Structure and Function Following Isometric Training.

Waugh CM¹, Alktebi T¹, de Sa A¹, Scott A¹.

Abstract

Intervention programs are often sought to strengthen the Achilles tendon (AT) due to its high injury rate.

Long rest periods between loading cycles have been found to increase collagen synthesis by tenocytes, suggesting rest duration may be important for tendon adaptation in vivo, however exercise programs comparing long and short rest duration have not been directly compared. Fourteen adults completed a 12-week progressive training intervention; training sessions consisted of 5 x 10 isometric plantarflexion contractions each of 3-s duration performed at 90% of MVC three times weekly. Each leg was randomly allocated to long (LRT, 10-s rest) or short rest training (SRT, 3-s rest). We hypothesized that the leg allocated to LRT would demonstrate superior AT collagen organization compared to the leg receiving SRT, which would be related to improved biomechanical function. AT collagen organization and morphology were measured using ultrasound tissue characterization. AT properties were assessed before and after the intervention using a combination of dynamometry, ultrasound imaging, EMG and motion capture.

Contrary to our hypothesis, collagen organization did not improve following either training protocol; conversely, an unexpected decrease in echotype I proportion was seen after SRT ($p < 0.001$) but not LRT ($p = 0.58$), indicating an apparent protective effect of rest on collagen organization during isometric training. In contrast, AT adaptation was not appreciably enhanced by increasing inter-cycle rest duration; both protocols were equally effective at inducing significant strength gains and AT mechanical and material adaptation ($p \leq 0.001$). Further research is necessary to identify optimal loading characteristics for injury prevention and rehabilitation. This article is protected by copyright.

42. PLANTAR SURFACE

MT helps

Does manual therapy improve pain and function in patients with plantar fasciitis? A systematic review

John J. Fraser, Revay Corbett, Chris Donner & Jay Hertel

- <http://dx.doi.org/10.1080/10669817.2017.1322736>

Abstract

Objective: To assess if manual therapy (MT) in the treatment of plantar fasciitis (PF) patients improves pain and function more effectively than other interventions.

Methods: A systematic review of all randomized control trials (RCTs) investigating the effects of MT in the treatment of human patients with PF, plantar fasciosis, and heel pain published in English on PubMed, CINAHL, Cochrane, and Web of Science databases was conducted. Research quality was appraised utilizing the PEDro scale. Cohen's d effect sizes (ES) and associated 95% confidence intervals (CI) were calculated between treatment groups.

Results: Seven RCTs were selected that employed MT as a primary independent variable and pain and function as dependent variables. Inclusion of MT in treatment yielded greater improvement in function (6 of 7 studies, CI that did not cross zero in 14 of 25 variables, ES = 0.5–21.5) and algometry (3 of 3 studies, CI that did not cross zero in 9 of 10 variables, ES = 0.7–3.0) from 4 weeks to 6 months when compared to interventions such as stretching, strengthening, or modalities. Though pain improved with the inclusion of MT, ES calculations favored MT in only 2 of 6 studies (3 of 13 variables) and was otherwise equivalent in effectiveness to comparison interventions.

Discussion: MT is clearly associated with improved function and may be associated with pain reduction in PF patients. It is recommended that clinicians consider use of both joint and soft tissue mobilization techniques in conjunction with stretching and strengthening when treating patients with PF.

Level of Evidence: Treatment, level 1a.

Keywords: Mobilization, manipulation, heel pain, soft tissue, aponeurosis, plantar fascia

45 A. MANUAL THERAPY LUMBAR & GENERAL**McKenzie for LBP**

Br J Sports Med. 2017 Jul 12. pii: bjsports-2016-097327. doi: 10.1136/bjsports-2016-097327.

McKenzie Method of Mechanical Diagnosis and Therapy was slightly more effective than placebo for pain, but not for disability, in patients with chronic non-specific low back pain: a randomised placebo controlled trial with short and longer term follow-up.

Garcia AN¹, Costa LDCM¹, Hancock MJ², Souza FS¹, Gomes GVFO¹, Almeida MO¹, Costa LOP^{1,3}.

BACKGROUND:

The McKenzie Method of Mechanical Diagnosis and Therapy (MDT) is one of the exercise approaches recommended by low back pain (LBP) guidelines. We investigated the efficacy of MDT compared with placebo in patients with chronic LBP.

METHODS:

This was a prospectively registered, two-arm randomised placebo controlled trial, with a blinded assessor. A total of 148 patients seeking care for chronic LBP were randomly allocated to either MDT (n=74) or placebo (n=74). Patients from both groups received 10 treatment sessions over 5 weeks. Patients from both groups also received an educational booklet. Clinical outcomes were obtained at the end of treatment (5 weeks) and 3, 6 and 12 months after randomisation. Primary outcomes were pain intensity and disability at the end of treatment (5 weeks). We also conducted a subgroup analysis to identify potential treatment effect modifiers that could predict a better response to MDT treatment.

RESULTS:

The MDT group had greater improvements in pain intensity at the end of treatment (mean difference (MD) -1.00, 95% CI -2.09 to -0.01) but not for disability (MD -0.84, 95% CI -2.62 to 0.93). We did not detect between-group differences for any secondary outcomes, nor were any treatment effect modifiers identified. Patients did not report any adverse events.

CONCLUSION:

We found a small and likely not clinically relevant difference in pain intensity favouring the MDT method immediately at the end of 5 weeks of treatment but not for disability. No other difference was found for any of the primary or secondary outcomes at any follow-up times.

Spinal stiffness

BMC Complement Altern Med. 2017; 17: 303.

Published online 2017 Jun 9. doi: 10.1186/s12906-017-1821-1 PMCID: PMC5466774

Association of lumbar spine stiffness and flexion-relaxation phenomenon with patient-reported outcomes in adults with chronic low back pain – a single-arm clinical trial investigating the effects of thrust spinal manipulation

Ting Xia,¹ Cynthia R. Long,¹ Robert D. Vining,¹ Maruti R. Gudavalli,¹ James W. DeVocht,¹ Gregory N. Kawchuk,² David G. Wilder,³ and Christine M. Goertz¹

Background

Spinal manipulation (SM) is used commonly for treating low back pain (LBP). Spinal stiffness is routinely assessed by clinicians performing SM. Flexion-relaxation ratio (FRR) was shown to distinguish between LBP and healthy populations. The primary objective of this study was to examine the association of these two physiological variables with patient-reported pain intensity and disability in adults with chronic LBP (>12 weeks) receiving SM.

Methods

A single-arm trial provided 12 sessions of side-lying thrust SM in the lumbosacral region over 6 weeks. Inclusion criteria included 21–65 years old, Roland-Morris Disability Questionnaire (RMDQ) score ≥ 6 and numerical pain rating score ≥ 2 . Spinal stiffness and FRR were assessed pre-treatment at baseline, after 2 weeks and after 6 weeks of treatment. Lumbar spine global stiffness (GS) were calculated from the force-displacement curves obtained using i) hand palpation, ii) a hand-held device, and iii) an automated indenter device. Lumbar FRR was assessed during trunk flexion-extension using surface electromyography. The primary outcomes were RMDQ and pain intensity measured by visual analog scale (VAS). Mixed-effects regression models were used to analyze the data.

Results

The mean age of the 82 participants was 45 years; 48% were female; and 84% reported LBP >1 year. The mean (standard deviation) baseline pain intensity and RMDQ were 46.1 (18.1) and 9.5 (4.3), respectively. The mean reduction (95% confidence interval) after 6 weeks in pain intensity and RMDQ were 20.1 mm (14.1 to 26.1) and 4.8 (3.7 to 5.8). There was a small change over time in the palpatory GS but not in the hand-held or automated GS, nor in FRR. The addition of each physiologic variable did not affect the model-estimated changes in VAS or RMDQ over time. There was no association seen between physiological variables and LBP intensity. Higher levels of hand-held GS at L3 and automated GS were significantly associated with higher levels of RMDQ ($p = 0.02$ and 0.03 , respectively) and lower levels of flexion and extension FRR were significantly associated with higher levels of RMDQ ($p = 0.02$ and 0.008 , respectively) across the 3 assessment time points.

Conclusions

Improvement in pain and disability observed in study participants with chronic LBP was not associated with the measured GS or FRR.

MT better with ice

Altern Ther Health Med. 2017 Jun 23. pii: AT5574. [Epub ahead of print]

Manual Therapy With Cryotherapy Versus Manual Therapy With Kinesio Taping for Males With Lumbar Discopathy: A Pilot Randomized Trial.

Lizis P, Kobza W.

Abstract

Context • Numerous modalities of therapeutic interventions exist for lumbar discopathy. Manual therapy is one option, although its effectiveness remains controversial. The addition of cryotherapy to manual therapy may enhance the health benefits in patients with lumbar discopathy.

Objective • The study intended to evaluate the efficacy of manual therapy combined with cryotherapy vs manual therapy combined with Kinesio taping for males with lumbar discopathy.

Design • The research team designed a pilot randomized trial with concealed allocation, assessor blinding, and intention-to-treat analysis.

Setting • The study occurred in the Physiotherapy Outpatient Department of the Regional Hospital (Zywiec, Poland). **Participants** • The participants were 40 males with lumbar discopathy, aged 30-75 y, who were patients in the department at the hospital. **Intervention** • The participants were randomly assigned to an intervention group that received Kaltenborn-Evjenth orthopedic manual therapy (KEOMT) combined with cryotherapy, the KEOMT-C group (n = 20), or to a control group that received KEOMT combined with Kinesio taping, the KEOMT-K group (n = 20). The participants in both groups received 10 treatments, 2 per wk for 5 wk.

Outcome Measures • The primary outcome was measured using a visual analog scale and the Laitinen scale pain ratings. The secondary outcome measured the quality of life using the short form-36 questionnaire. The participants completed the tests at baseline and postintervention.

Results • After the treatments, the intervention group had significantly lower scores than the control group for pain as well as significantly higher scores for quality of life.

Conclusions • Patients achieved better health benefits from manual therapy when it was combined with cryotherapy.

45 B. MANUAL THERAPY CERVICAL

Adverse events

Adverse events following cervical manipulative therapy: consensus on classification among Dutch medical specialists, manual therapists, and patients

Hendrikus A. Kranenburg , Sandra E. Lakke , Maarten A. Schmitt  & Cees P. Van der Schans

<http://dx.doi.org/10.1080/10669817.2017.1332556>

Abstract

Objectives: To obtain consensus-based agreement on a classification system of adverse events (AE) following cervical spinal manipulation. The classification system should be comprised of clear definitions, include patients' and clinicians' perspectives, and have an acceptable number of categories.

Methods: *Design:* A three-round Delphi study. *Participants:* Thirty Dutch participants (medical specialists, manual therapists, and patients) participated in an online survey. *Procedure:* Participants inventoried AE and were asked about their preferences for either a three- or a four-category classification system. The identified AE were classified by two analysts following the International Classification of Functioning, Disability and Health (ICF), and the International Classification of Diseases and Related Health Problems (ICD-10). Participants were asked to classify the severity for all AE in relation to the time duration.

Results: Consensus occurred in a three-category classification system. There was strong consensus for 16 AE in all severities (no, minor, and major AE) and all three time durations [hours, days, weeks]. The 16 AE included anxiety, flushing, skin rash, fainting, dizziness, coma, altered sensation, muscle tenderness, pain, increased pain during movement, radiating pain, dislocation, fracture, transient ischemic attack, stroke, and death. Mild to strong consensus was reached for 13 AE.

Discussion: A consensus-based classification system of AE is established which includes patients' and clinicians' perspectives and has three categories. The classification comprises a precise description of potential AE in accordance with internationally accepted classifications. After international validation, clinicians and researchers may use this AE classification system to report AE in clinical practice and research.

45 D. MANUAL THERAPY EXTREMITIES**Hip OA**

Pilot Feasibility Stud. 2017 Jul 7;4:16. doi: 10.1186/s40814-017-0157-4. eCollection 2018.

A pilot randomised clinical trial of physiotherapy (manual therapy, exercise, and education) for early-onset hip osteoarthritis post-hip arthroscopy.

Kemp J^{1,2}, Moore K³, Fransen M⁴, Russell T⁵, Freke M⁵, Crossley KM¹.

BACKGROUND:

Despite the increasing use of hip arthroscopy for hip pain, there is no level 1 evidence to support physiotherapy rehabilitation programs following this procedure. The aims of this study were to determine (i) what is the feasibility of a randomised controlled trial (RCT) investigating a targeted physiotherapy intervention for early-onset hip osteoarthritis (OA) post-hip arthroscopy? and (ii) what are the within-group treatment effects of the physiotherapy intervention and a health-education control group?

METHODS:

This study was a pilot single-blind RCT conducted in a private physiotherapy clinic in Hobart, Australia. Patients included 17 volunteers (nine women; age 32 ± 8 years; body mass index = 25.6 ± 5.1 kg/m²) who were recruited 4-14 months post-hip arthroscopy, with chondropathy and/or labral pathology at the time of surgery. Interventions included a physiotherapy treatment program that was semi-standardised and consisted of (i) manual therapy; (ii) hip strengthening and functional retraining; and (iii) health education. Control treatment encompassed individualised health education sessions. The primary outcome measure was feasibility, which was reported as percentage of eligible participants enrolled, adherence with the intervention, and losses to follow-up. The research process was evaluated using interviews, and an estimated sample size for a definitive study is offered. Secondary outcomes included the Hip disability and Osteoarthritis Outcome Score (HOOS) and the International Hip Outcome Tool (IHOT-33) patient-reported outcomes.

RESULTS:

Seventeen out of 48 eligible patients (35%) were randomised. Adherence to the intervention was 100%, with no losses to follow-up. The estimated sample size for a full-scale RCT was 142 patients. The within-group (95% confidence intervals) change scores for the physiotherapy group were HOOS-Symptoms 6 points (-4 to 16); HOOS-Pain 10 points (-2 to 22); HOOS-Activity of Daily Living 8 points (0 to 16); HOOS-Sport 3 points (-12 to 19); HOOS-Quality of Life 3 points (-7 to 13); and IHOT-33 7 points (-10 to 25). The within-group (95% confidence intervals) change scores for the control group were HOOS-Symptoms -4 points (-17 to 9); HOOS-Pain -2 points (-18 to 13); HOOS-Activity of Daily Living -7 points (-17 to 4); HOOS-Sport 4 points (-16 to 23); HOOS-Quality of Life -5 points (-18 to 9); and IHOT-33 -4 points (-27 to 19). Suggestions to improve study design included greater supervision of exercises and increased access to physiotherapy appointments.

CONCLUSIONS:

Results support the feasibility of a full-scale RCT, and recommendations for an adequately powered and improved study to determine the efficacy of this physiotherapy intervention post-hip arthroscopy to reduce pain and improve function are provided.

Plantar fasciitis

Does manual therapy improve pain and function in patients with plantar fasciitis? A systematic review**John J. Fraser**, Revay Corbett, Chris Donner & Jay Hertel

- <http://dx.doi.org/10.1080/10669817.2017.1322736>

Abstract

Objective: To assess if manual therapy (MT) in the treatment of plantar fasciitis (PF) patients improves pain and function more effectively than other interventions.

Methods: A systematic review of all randomized control trials (RCTs) investigating the effects of MT in the treatment of human patients with PF, plantar fasciosis, and heel pain published in English on PubMed, CINAHL, Cochrane, and Web of Science databases was conducted. Research quality was appraised utilizing the PEDro scale. Cohen's d effect sizes (ES) and associated 95% confidence intervals (CI) were calculated between treatment groups.

Results: Seven RCTs were selected that employed MT as a primary independent variable and pain and function as dependent variables. Inclusion of MT in treatment yielded greater improvement in function (6 of 7 studies, CI that did not cross zero in 14 of 25 variables, ES = 0.5–21.5) and algometry (3 of 3 studies, CI that did not cross zero in 9 of 10 variables, ES = 0.7–3.0) from 4 weeks to 6 months when compared to interventions such as stretching, strengthening, or modalities. Though pain improved with the inclusion of MT, ES calculations favored MT in only 2 of 6 studies (3 of 13 variables) and was otherwise equivalent in effectiveness to comparison interventions.

Discussion: MT is clearly associated with improved function and may be associated with pain reduction in PF patients. It is recommended that clinicians consider use of both joint and soft tissue mobilization techniques in conjunction with stretching and strengthening when treating patients with PF.

Level of Evidence: Treatment, level 1a.

Keywords: Mobilization, manipulation, heel pain, soft tissue, aponeurosis, plantar fascia

47. STRETCHING/MUSCLES**ADDuctor tears**

Scand J Med Sci Sports. 2017 Jun 26. doi: 10.1111/sms.12936.

Characteristics of acute groin injuries in the adductor muscles - a detailed MRI study in athletes.

Serner A^{1,2}, Weir A¹, Tol JL^{1,3,4}, Thorborg K², Roemer F^{5,6}, Guermazi A⁵, Yamashiro E¹, Hölmich P^{1,2}.

Acute adductor injuries account for the majority of acute groin injuries; however, little is known about specific injury characteristics, which could be important for the understanding of etiology and management of these injuries.

The study aim was to describe acute adductor injuries in athletes using magnetic resonance imaging (MRI). Male athletes with acute groin pain and an MRI confirmed acute adductor muscle injury were prospectively included. MRI was performed within 7 days using a standardized protocol and a reliable assessment approach. 156 athletes presented with acute groin pain of which 71 athletes were included, median age 27 y (range 18-37). There were 46 isolated muscle injuries, and 25 athletes with multiple adductor injuries. In total, 111 acute adductor muscle injuries were recorded; 62 adductor longus, 18 adductor brevis, 17 pectineus, 9 obturator externus, 4 gracilis and 1 adductor magnus injury. Adductor longus injuries occurred at three main injury locations; proximal insertion (26%), intramuscular musculotendinous junction (MTJ) of the proximal tendon (26%) and the MTJ of the distal tendon (37%). Intramuscular tendon injury was seen in 1 case. At the proximal insertion 12 of 16 injuries were complete avulsions.

This study shows that acute adductor injuries generally occur in isolation from other muscle groups. Adductor longus is the most frequently injured muscle in isolation and in combination with other adductor muscle injuries. Three characteristic adductor longus injury locations were observed on MRI, with avulsion injuries accounting for three quarters of injuries at the proximal insertion, and intramuscular tendon injury was uncommon.

48 A. STM**Mechanotherapy and adaptations**

Front Physiol. 2017; 8: 303. 10.3389/fphys.2017.00303 PMID: PMC5460618

Establishing the Basis for Mechanobiology-Based Physical Therapy Protocols to Potentiate Cellular Healing and Tissue Regeneration

Joanna L. Ng,¹ Mariana E. Kersh,² Sharon Kilbreath,³ and M. Knothe Tate^{1,*}

Abstract

Life is mechanobiological: mechanical stimuli play a pivotal role in the formation of structurally and functionally appropriate body templates through mechanobiologically-driven cellular and tissue re/modeling.

The body responds to mechanical stimuli engendered through physical movement in an integrated fashion, internalizing and transferring forces from organ, through tissue and cellular length scales. In the context of rehabilitation and therapeutic outcomes, such mechanical stimuli are referred to as mechanotherapy. Physical therapists use mechanotherapy and mechanical interventions, e.g., exercise therapy and manual mobilizations, to restore function and treat disease and/or injury. While the effect of directed movement, such as in physical therapy, is well documented at the length scale of the body and its organs, a number of recent studies implicate its integral effect in modulating cellular behavior and subsequent tissue adaptation. Yet the link between movement biomechanics, physical therapy, and subsequent cellular and tissue mechanoadaptation is not well established in the literature. Here we review mechanoadaptation in the context of physical therapy, from organ to cell scale mechanotransduction and cell to organ scale extracellular matrix genesis and re/modeling.

We suggest that physical therapy can be developed to harness the mechanosensitivity of cells and tissues, enabling prescriptive definition of physical and mechanical interventions to enhance tissue genesis, healing, and rehabilitation.

Keywords: mechanobiology, mechanotransduction, physical therapy, rehabilitation, exercise therapy, tissue regeneration, human health and disease, multiscale adaptation

Pain identification

Am J Phys Med Rehabil. 2017 Jul 3. doi: 10.1097/PHM.0000000000000790.

Effects of Myofascial Release on Pressure Pain Thresholds in Patients With Neck Pain: A Single-Blind Randomized Controlled Trial.

Rodríguez-Huguet M¹, Gil-Salú JL, Rodríguez-Huguet P, Cabrera-Afonso JR, Lomas-Vega R.

OBJECTIVE:

This study aimed to investigate the efficacy of myofascial release therapy (MRT) for improving pressure pain thresholds (PPTs) and pain in patients with mechanical neck pain.

DESIGN:

Forty-one participants with neck pain were randomly allocated to either a MRT group (five sessions) or a physical therapy (PT) group (ten sessions) for 2 wks. The multimodal PT program included ultrasound therapy (US), transcutaneous electric nerve stimulation, and massage. Visual analog scale (VAS) and PPTs in suboccipital and upper trapezius muscles were measured at baseline, at the end of treatment, and at 1 month follow-up.

RESULTS:

At the end of treatment, significant mean differences in VAS (-0.99, 95% confidence interval [CI] = -1.82 to -0.16), in both left (0.28, 95% CI = 0.06 to 0.50) and right (0.40, 95% CI = 0.16 to 0.63) suboccipital PPTs and in the right trapezius PPT (0.38, 95% CI = 0.07 to 0.69) were observed. At 1-month follow-up, significant mean differences were found for VAS (-1.85, 95% CI = -2.76 to -0.94) and both left (0.46, 95% CI = 0.12 to 0.80) and right (0.38, 95% CI = 0.06 to 0.69) suboccipital PPTs.

CONCLUSIONS:

This study provides evidence that MRT could be better than a multimodal PT program for short-term improvement of pain and PPTs in patients with neck pain.

Myofascial therapy did not help

Support Care Cancer. 2017 Jul;25(7):2119-2127. doi: 10.1007/s00520-017-3616-9. Epub 2017 Feb 14.

Effect of myofascial techniques for treatment of upper limb dysfunctions in breast cancer survivors: randomized controlled trial.

De Groef A¹, Van Kampen M², Verlvoesem N², Dieltjens E², Vos L², De Vrieze T², Christiaens MR^{3,4}, Neven P^{3,5}, Geraerts I², Devoogdt N².

Author information**Abstract****PURPOSE:**

Besides pain, myofascial dysfunctions may contribute to the presence of upper limb impairments such as impaired range of motion, decreased strength, lymphedema, and altered postures and kinematics. Therefore, the aim of this study was to investigate the effect of myofascial therapy in addition to a standard physical therapy program for treatment of upper limb dysfunctions in breast cancer survivors.

METHODS:

Fifty women treated for a unilateral breast cancer with pain and myofascial dysfunctions at the upper limb region. The intervention group received 12 sessions of myofascial therapy consisting of release techniques on myofascial trigger points and adhesions in addition to a standard physical therapy program for 3 months. The control group received 12 sessions of a placebo intervention in addition to the same standard physical therapy program during the 3 months. Outcome parameters are active shoulder range of motion (inclinometer); arm lymphedema (perimeter); upper limb strength (handheld dynamometer); scapular statics and dynamics (acromion-table and pectoralis minor index, inclinometer); shoulder function (Disability of Shoulder, Arm and Hand questionnaire); and quality of life (Short Form 36). Measures were taken before and after the intervention at 6 and 12 months follow-up.

RESULTS:

No differences between groups were found for all outcome parameters over the course of 1 year. However, overall beneficial effects of the standard physical therapy program for active shoulder range of motion and shoulder function were found in both groups up to 1 year follow-up.

CONCLUSION:

Myofascial therapy has no additional beneficial effect for improvement of upper limb function in breast cancer survivors.

48 B. TRIGGER POINTS NEEDLING/ACUPUNCTURE**Upper traps**

Am J Phys Med Rehabil. 2017 Jun 21. doi: 10.1097/PHM.0000000000000761

Surface Electromyographic Activity of the Upper Trapezius Before and After a Single Dry Needling Session in Female Office Workers With Trapezius Myalgia.

De Meulemeester K¹, Calders P, Dewitte V, Barbe T, Danneels L, Cagnie B.

OBJECTIVE:

Myofascial pain can be accompanied by a disturbed surface electromyographic (sEMG) activity. Nevertheless, the effect of myofascial treatment techniques, such as dry needling (DN), on the sEMG activity is poorly investigated. Several DN studies also emphasize the importance of eliciting local twitch responses (LTRs) during treatment. However, studies investigating the added value of LTRs are scarce. Therefore, the aims of this study were first to evaluate the effect of DN on the sEMG activity of myalgic muscle tissue, compared with no intervention (rest), and secondly to identify whether this effect is dependent of eliciting LTRs during DN.

METHODS:

Twenty-four female office workers with work-related trapezius myalgia were included. After completion of a typing task, changes in sEMG activity were evaluated after a DN treatment of the upper trapezius, compared with rest.

RESULTS:

The sEMG activity increased after rest and after DN, but this increase was significantly smaller 10 minutes after DN, compared with rest. These differences were independent whether LTRs were elicited or not.

CONCLUSIONS:

Dry needling leads to a significantly lower increase in sEMG activity of the upper trapezius, compared with no intervention, after a typing task. This difference was independent of eliciting LTRs.

49. STRETCHING

Eur J Appl Physiol. 2017 Aug;117(8):1713-1725. doi: 10.1007/s00421-017-3666-1. Epub 2017 Jun 24.

The effects of 4 weeks stretching training to the point of pain on flexibility and muscle tendon unit properties.

Muanjai P^{1,2}, Jones DA³, Mickevicius M⁴, Satkunskiene D⁴, Snieckus A⁴, Rutkauskaite R⁴, Mickeviciene D⁴, Kamandulis S⁴.

PURPOSE:

The purpose of this study was to compare the benefits and possible problems of 4 weeks stretching when taken to the point of pain (POP) and to the point of discomfort (POD).

METHODS:

Twenty-six physically active women (20 ± 1.1 years) took part in group-based stretching classes of the hamstring muscles, 4 times per week for 4 weeks, one group one stretching to POD, the other to POP. Passive stiffness, joint range of motion (ROM), maximal isometric torque and concentric knee flexion torque, were measured before training and 2 days after the last training session.

RESULTS:

Hip flexion ROM increased by 14.1° (10.1° - 18.1°) and 19.8° (15.1° - 24.5°) and sit-and-reach by 7.6 (5.2-10.0) cm and 7.5 (5.0-10.0) cm for POD and POP, respectively (Mean and 95% CI; $p < 0.001$ within group; NS between groups), with no evidence of damage in either group. Despite the large increases in flexibility there were no changes in either compliance or viscoelastic properties of the muscle tendon unit (MTU).

CONCLUSION:

Hamstrings stretching to POP increased flexibility and had no detrimental effects on muscle function but the benefits were no better than when stretching to POD so there is no justification for recommending painful stretching. The improvements in flexibility over 4 weeks of stretching training appear to be largely due to changes in the perception of pain rather than physical properties of the MTU although less flexible individuals benefited more from the training and increased hamstring muscle length.

52. EXERCISE

Painful exercise

Should exercises be painful in the management of chronic musculoskeletal pain? A systematic review and meta-analysis

Benjamin E Smith^{1,2}, Paul Hendrick³, Pip Logan²

Abstract

Background Chronic musculoskeletal disorders are a prevalent and costly global health issue. A new form of exercise therapy focused on loading and resistance programmes that temporarily aggravates a patient's pain has been proposed. The object of this review was to compare the effect of exercises where pain is allowed/encouraged compared with non-painful exercises on pain, function or disability in patients with chronic musculoskeletal pain within randomised controlled trials.

Methods Two authors independently selected studies and appraised risk of bias. Methodological quality was evaluated using the Cochrane risk of bias tool, and the Grading of Recommendations Assessment system was used to evaluate the quality of evidence.

Results The literature search identified 9081 potentially eligible studies. Nine papers (from seven trials) with 385 participants met the inclusion criteria. There was short-term significant difference in pain, with moderate quality evidence for a small effect size of -0.27 (-0.54 to -0.05) in favour of painful exercises. For pain in the medium and long term, and function and disability in the short, medium and long term, there was no significant difference.

Conclusion Protocols using painful exercises offer a small but significant benefit over pain-free exercises in the short term, with moderate quality of evidence. In the medium and long term there is no clear superiority of one treatment over another. Pain during therapeutic exercise for chronic musculoskeletal pain need not be a barrier to successful outcomes. Further research is warranted to fully evaluate the effectiveness of loading and resistance programmes into pain for chronic musculoskeletal disorders.

55. SCOLIOSIS

Surgical problems

Spine (Phila Pa 1976). 2017 Jul 1;42(13):999-1005. doi: 10.1097/BRS.0000000000001968.

5-Year Reoperation Risk and Causes for Revision After Idiopathic Scoliosis Surgery.

Ahmed SI¹, Bastrom TP, Yaszay B, Newton PO; Harms Study Group.

STUDY DESIGN:

An actuarial "survivorship" analysis.

OBJECTIVE:

The aim of this study was to define the incidence and cause of surgical revision 5 years after scoliosis surgery.

SUMMARY OF BACKGROUND DATA:

Data on contemporary revision surgery rates after idiopathic scoliosis surgery beyond the 2 years postoperatively in the adolescent and young adult population are limited.

METHODS:

Patients enrolled in a prospective, multicenter, idiopathic scoliosis surgical registry from 1995 to 2009 were reviewed. Any spine reoperation was defined as a "terminal event." An actuarial survivorship analysis that adjusts for patients lost to follow-up was performed to determine cumulative survival. Time intervals were defined as 0 to <3 months, 3 months to <1 year, 1 to <2 years, 2 to <5 years, and 5 to 10 years. Registry data and radiographs were reviewed and five categories for reoperation assigned: 1) implant failure and/or pseudarthrosis, 2) implant misplacement and/or prominence, 3) wound complication and/or infection, 4) residual deformity and/or progression, and 5) other.

RESULTS:

One thousand four hundred thirty-five patients from 12 sites were included. The majority were female (80%), with major thoracic curves (76% Lenke 1-4), and average age of 15±2 years (10-22) at surgery. Most had posterior spinal instrumentation and fusion (81%). At this time, 75 (5.2%) patients required reoperation. Twenty-two occurred within 3 months postop, 10 more before 1 year, 12 more before 2 years, another 20 by 5 years, and 10 more after 5 years. This corresponded to an actuarial cumulative survival of 98.3% at 3 months, 97.5% at 1 year, 96.6% at 2 years, 93.9% at 5 years, and 89.8% at the final interval (5-10 yrs).

CONCLUSION:

Revisions for scoliosis continue to occur well after 2 years with a 5-year survivorship of 93.9%. Reasons for reoperation are not uniformly distributed over time, with implant-related issues and infection the leading cause for early revision, while late infection was the most common cause after 2 years. Long-term follow-up of these postoperative patients remains important.

56. ATHLETICS**Factors related to LE injuries in women**

Scand J Med Sci Sports. 2017 Jul 4. doi: 10.1111/sms.12944.

Kinematic chain related risk factors in the development of lower extremity injuries in women: A prospective study.

Verrelst R¹, Van Tiggelen D¹, De Ridder R¹, Witvrouw E¹.

The link between dynamic range of motion (dROM) parameters within the kinematic chain and the development of lower extremity (LE) injury have gained attention, however very few longitudinal studies have been conducted.

Therefore, we wanted to prospectively determine dROM related risk factors for the development of LE injury. Within this study, 90 female physical education students aged 19.33 ± 0.87 years were tested. Full-body kinematic and vertical ground reaction force (VGRF) parameters were measured during a triple hop jump (THJ). Cox regression analysis was used to identify potential risk factors for the development of LE injury. The injury follow-up was assessed using a weekly online questionnaire and a tri-monthly retrospective control questionnaire. Lower extremity injury was diagnosed by an experienced medical doctor. During the follow-up, 39 percent of the participants were diagnosed with a LE injury. Decreased dROM of the pelvic segment ($P=0.043$) and increased dROM of the knee and ankle joint ($P=0.041$ and $P=0.028$ respectively) in the sagittal plane during landing phase were identified as predictive parameters for the development of LE injury in women. No VGRF parameters were identified as predictive variables.

It can be concluded that an altered dROM within the LE kinematic chain was observed within the group at risk for LE injury. More specifically, this group showed reduced proximal dROM that was coupled with increased dROM in the distal segments during a THJ. The THJ can be seen as a practical screening tool for LE injury. This article is protected by copyright. All rights reserved.

Mindfulness practice

Sports Med. 2017 Jun 29. doi: 10.1007/s40279-017-0752-9.

Effects of Mindfulness Practice on Performance-Relevant Parameters and Performance Outcomes in Sports: A Meta-Analytical Review.

Bühlmayer L^{1,2}, Birrer D¹, Röthlin P¹, Faude O², Donath L^{3,4}.

BACKGROUND: Mindfulness as a present-oriented form of mental training affects cognitive processes and is increasingly considered meaningful for sport psychological training approaches. However, few intervention studies have examined the effects of mindfulness practice on physiological and psychological performance surrogates or on performance outcomes in sports. **OBJECTIVE:** The aim of the present meta-analytical review was to examine the effects of mindfulness practice or mindfulness-based interventions on physiological and psychological performance surrogates and on performance outcomes in sports in athletes over 15 years of age. **DATA SOURCES:** A structured literature search was conducted in six electronic databases (CINAHL, EMBASE, ISI Web of Knowledge, PsycINFO, MEDLINE and SPORTDiscus). The following search terms were used with Boolean conjunction: (mindful* OR meditat* OR yoga) AND (sport* OR train* OR exercis* OR intervent* OR perform* OR capacity OR skill*) AND (health* OR adult* OR athlete*). **STUDY SELECTION:** Randomized and non-randomized controlled studies that compared mindfulness practice techniques as an intervention with an inactive control or a control that followed another psychological training program in healthy sportive participants were screened for eligibility. **DATA EXTRACTION:** Eligibility and study quality [Physiotherapy Evidence Database (PEDro)] scales were independently assessed by two researchers. A third independent researcher was consulted to achieve final consensus in case of disagreement between both researchers. Standardized mean differences (SMDs) were calculated as weighted Hedges' g and served as the main outcomes in comparing mindfulness practice versus control. Statistical analyses were conducted using a random-effects inverse-variance model.

RESULTS: Nine trials of fair study quality (mean PEDro score 5.4, standard deviation 1.1) with 290 healthy sportive participants (athletics, cyclists, dart throwers, hammer throwers, hockey players, hurdlers, judo fighters, rugby players, middle-distance runners, long-distance runners, shooters, sprinters, volleyball players) were included. Intervention time varied from 4 weeks to over 2 years. The practice frequency lasted from twice daily to just once a week, and the mean session time covered 50-60 min. In favor of mindfulness practice compared with the control condition, large effects with narrow confidence limits and low heterogeneity were found for mindfulness scores [SMD 1.03, 90% confidence interval (CI) 0.67-1.40, $p < 0.001$, $I^2 = 17\%$]. Physiological performance indices depicted wide confidence limits accompanied with very large heterogeneity. However, the effect sizes remained very large, with confidence limits that did not overlap zero (SMD 3.62, 90% CI 0.03-7.21, $p = 0.10$, $I^2 = 98\%$). Moderate to large effects were observed for both psychological performance surrogates (SMD 0.72, 90% CI 0.46-0.98, $p < 0.001$, $I^2 = 14\%$) and performance outcomes in shooting and dart throwing (SMD 1.35, 90% CI 0.61-2.09, $p = 0.003$, $I^2 = 82\%$).

CONCLUSIONS: Mindfulness practice consistently and beneficially modulates mindfulness scores. Furthermore, physiological and psychological surrogates improved to a meaningful extent following mindfulness practice, as well as performance outcomes in shooting and dart throwing. It seems reasonable to consider mindfulness practice strategies as a regular complementary mental skills training approach for athletes, at least in precision sports; however, more high-quality, randomized, controlled trials on mindfulness practice and performance improvements in diverse sport settings are needed.

Inspiratory muscle training

J Sports Sci. 2017 Jun 16:1-10. doi: 10.1080/02640414.2017.1340659.

Effects of inspiratory muscle training in professional women football players: a randomized sham-controlled trial.

Archiza B¹, Andaku DK¹, Caruso FCR¹, Bonjorno JC Jr², Oliveira CR², Ricci PA¹, Amaral ACD³, Mattiello SM¹, Libardi CA⁴, Phillips SA⁵, Arena R⁵, Borghi-Silva A¹.

This study was conducted to determine the effects of inspiratory muscle training (IMT) on respiratory and peripheral muscles oxygenation during a maximal exercise tolerance test and on repeated-sprint ability (RSA) performance in professional women football players.

Eighteen athletes were randomly assigned to one of the following groups: SHAM (n = 8) or IMT (n = 10). After a maximal incremental exercise test, all participants performed (on a different day) a time-to-exhaustion (Tlim) test. Peripheral and respiratory muscles oxygenation by near-infrared spectroscopy, breath-by-breath ventilatory and metabolic variables, and blood lactate concentration were measured. The RSA test was performed on a grass field. After a 6 week intervention, all athletes were reevaluated. Both groups showed increases in inspiratory muscles strength, exercise tolerance and RSA performance, however only the IMT group presented lower deoxyhemoglobin and total hemoglobin blood concentrations on intercostal muscles concomitantly to an increased oxyhemoglobin and total hemoglobin blood concentrations on vastus lateralis muscle during Tlim.

In conclusion, these results may indicate the potential role of IMT to attenuate inspiratory muscles metaboreflex and consequently improve oxygen and blood supply to limb muscles during high-intensity exercise, with a potential impact on inspiratory muscle strength, exercise tolerance and sprints performance in professional women football players.

Female tennis player post shoulder surgery

Clin J Sport Med. 2017 Jul;27(4):357-360. doi: 10.1097/JSM.0000000000000361.

Arthroscopic Shoulder Surgery in Female Professional Tennis Players: Ability and Timing to Return to Play.

Young SW¹, Dakic J, Stroia K, Nguyen ML, Safran MR.

OBJECTIVE:

To assess the outcome and time to return to previous level of competitive play after shoulder surgery in professional tennis players.

DESIGN:

Retrospective case series.

SETTING:

Tertiary academic centre.

PATIENTS AND INTERVENTIONS:

The records of all female tennis players on the Women's Tennis Association (WTA) professional circuit between January 2008 and June 2010 were reviewed to identify players who underwent shoulder surgery on their dominant (serving) shoulder.

MAIN OUTCOME MEASURES:

Primary outcomes were the ability and time to return to professional play and if they were able to return to their previous level of function as determined by singles ranking. Preoperative and postoperative singles rankings were used to determine rate and completeness of return to preoperative function.

RESULTS:

During the study period, 8 professional women tennis players from the WTA tour underwent shoulder surgery on their dominant arm. Indications included rotator cuff debridement or repair, labral reconstruction for instability or superior labral anterior posterior lesion, and neurolysis of the suprascapular nerve. Seven players (88%) returned to professional play. The mean time to return to play was 7 months after surgery. However, only 25% (2 of 8) players achieved their preinjury singles rank or better by 18 months postoperatively. In total, 4 players returned to their preinjury singles ranking, with their peak singles ranking being attained at a mean of 2.4 years postoperatively.

CONCLUSIONS:

In professional female tennis players, a high return to play rate after arthroscopic shoulder surgery is associated with a prolonged and often incomplete return to previous level of performance. Thus, counseling the patient to this fact is important to manage expectations.

LEVEL OF EVIDENCE: *Level IV-Case Series.*

57. GAIT**ACL gait**

Knee Surg Sports Traumatol Arthrosc. 2017 Jul 3. doi: 10.1007/s00167-017-4618-3

Changes in gait pattern and early functional results after ACL repair are comparable to those of ACL reconstruction.

Schliemann B¹, Glasbrenner J², Rosenbaum D³, Lammers K², Herbort M², Domnick C², Raschke MJ², Kösters C².

PURPOSE:

Dynamic intraligamentary stabilization (DIS) has been introduced as a new technique to repair the torn anterior cruciate ligament (ACL) and to restore knee joint kinematics after an acute ACL tear. Aim of the present study was to compare the early post-operative activity, restoration of gait pattern and functional results after DIS in comparison with primary ACL reconstruction (ACLR) for acute ACL tears. It was hypothesized that functional results, post-operative activity and changes in gait pattern after DIS are comparable to those after ACLR.

METHODS:

Sixty patients with acute ACL tears were included in this study and underwent either DIS or ACLR with an anatomic semitendinosus autograft in a randomized manner. Patients were equipped with an accelerometric step counter for the first 6 weeks after surgery in order to monitor their early post-operative activity. 3D gait analysis was performed at 6 weeks and 6 months after surgery. Temporal-spatial, kinematic and kinetic parameters were extracted and averaged for each subject. Functional results were recorded at 6 weeks, 6 months and 12 months after surgery using the Tegner activity scale, International Knee Documentation Committee score and Lysholm score.

RESULTS:

Patients who underwent DIS showed an increased early post-operative activity with significant differences at week 2 and 3 ($p = 0.0241$ and 0.0220). No significant differences between groups were found for knee kinematic and kinetic parameters or the functional scores at any time of the follow-up. Furthermore, the difference in anterior tibial translation was not significantly different between the two groups (n.s.).

CONCLUSION:

Early functional results and changes in gait pattern after DIS are comparable to those of primary ACLR. Therefore, ACL repair may be an alternative to ACLR in this cohort of patients.

61. FIBROMYALGIA

Aerobic exercise

- **Cochrane Database of Systematic Reviews**

- **Aerobic exercise training for adults with fibromyalgia**

Authors Julia Bidonde, Angela J Busch, Candice L Schachter, Heather JA Foulds

- **DOI:** 10.1002/14651858.CD012700 [View/save citation](#)

Background Exercise training is commonly recommended for individuals with fibromyalgia. This review is one of a series of reviews about exercise training for people with fibromyalgia that will replace the "Exercise for treating fibromyalgia syndrome" review first published in 2002.

Objectives • To evaluate the benefits and harms of aerobic exercise training for adults with fibromyalgia • To assess the following specific comparisons

- Aerobic versus control conditions (eg, treatment as usual, wait list control, physical activity as usual)

- Aerobic versus aerobic interventions (eg, running vs brisk walking)
- Aerobic versus non-exercise interventions (eg, medications, education)

Search methods We searched the Cochrane Library, MEDLINE, Embase, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Physiotherapy Evidence Database (PEDro), Thesis and Dissertation Abstracts, the Allied and Complementary Medicine Database (AMED), the World Health Organization International Clinical Trials Registry Platform (WHO ICTRP), and the ClinicalTrials.gov registry up to June 2016, unrestricted by language, and we reviewed the reference lists of retrieved trials to identify potentially relevant trials.

Selection criteria We included randomized controlled trials (RCTs) in adults with a diagnosis of fibromyalgia that compared aerobic training interventions (dynamic physical activity that increases breathing and heart rate to submaximal levels for a prolonged period) versus no exercise or another intervention. Major outcomes were health-related quality of life (HRQL), pain intensity, stiffness, fatigue, physical function, withdrawals, and adverse events.

Data collection and analysis Two review authors independently selected trials for inclusion, extracted data, performed a risk of bias assessment, and assessed the quality of the body of evidence for major outcomes using the GRADE approach. We used a 15% threshold for calculation of clinically relevant differences between groups.

Main results We included 13 RCTs (839 people). Studies were at risk of selection, performance, and detection bias (owing to lack of blinding for self-reported outcomes) and had low risk of attrition and reporting bias. We prioritized the findings when aerobic exercise was compared with no exercise control and present them fully here.

Eight trials (with 456 participants) provided low-quality evidence for pain intensity, fatigue, stiffness, and physical function; and moderate-quality evidence for withdrawals and HRQL at completion of the intervention (6 to 24 weeks). With the exception of withdrawals and adverse events, major outcome measures were self-reported and were expressed on a 0 to 100 scale (lower values are best, negative mean differences (MDs)/standardized mean differences (SMDs) indicate improvement). Effects for aerobic exercise versus control were as follows: HRQL: mean 56.08; five studies; N = 372; MD -7.89, 95% CI -13.23 to -2.55; absolute improvement of 8% (3% to 13%) and relative improvement of 15% (5% to 24%); pain intensity: mean 65.31; six studies; N = 351; MD -11.06, 95% CI -18.34 to -3.77; absolute improvement of 11% (95% CI 4% to 18%) and relative improvement of 18% (7% to 30%); stiffness: mean 69; one study; N = 143; MD -7.96,

ABSTRACTS

95% CI -14.95 to -0.97; absolute difference in improvement of 8% (1% to 15%) and relative change in improvement of 11.4% (21.4% to 1.4%); physical function: mean 38.32; three studies; N = 246; MD -10.16, 95% CI -15.39 to -4.94; absolute change in improvement of 10% (15% to 5%) and relative change in improvement of 21.9% (33% to 11%); and fatigue: mean 68; three studies; N = 286; MD -6.48, 95% CI -14.33 to 1.38; absolute change in improvement of 6% (12% improvement to 0.3% worse) and relative change in improvement of 8% (16% improvement to 0.4% worse). Pooled analysis resulted in a risk ratio (RR) of moderate quality for withdrawals (17 per 100 and 20 per 100 in control and intervention groups, respectively; eight studies; N = 456; RR 1.25, 95%CI 0.89 to 1.77; absolute change of 5% more withdrawals with exercise (3% fewer to 12% more). Three trials provided low-quality evidence on long-term effects (24 to 208 weeks post intervention) and reported that benefits for pain and function persisted but did not for HRQL or fatigue. Withdrawals were similar, and investigators did not assess stiffness and adverse events. We are uncertain about the effects of one aerobic intervention versus another, as the evidence was of low to very low quality and was derived from single trials only, precluding meta-analyses. Similarly, we are uncertain of the effects of aerobic exercise over active controls (ie, education, three studies; stress management training, one study; medication, one study) owing to evidence of low to very low quality provided by single trials. Most studies did not measure adverse events; thus we are uncertain about the risk of adverse events associated with aerobic exercise.

Authors' conclusions When compared with control, moderate-quality evidence indicates that aerobic exercise probably improves HRQL and all-cause withdrawal, and low-quality evidence suggests that aerobic exercise may slightly decrease pain intensity, may slightly improve physical function, and may lead to little difference in fatigue and stiffness. Three of the reported outcomes reached clinical significance (HRQL, physical function, and pain). Long-term effects of aerobic exercise may include little or no difference in pain, physical function, and all-cause withdrawal, and we are uncertain about long-term effects on remaining outcomes. We downgraded the evidence owing to the small number of included trials and participants across trials, and because of issues related to unclear and high risks of bias (performance, selection, and detection biases). Aerobic exercise appears to be well tolerated (similar withdrawal rates across groups), although evidence on adverse events is scarce, so we are uncertain about its safety.

62 A. NUTRITION/VITAMINS**Cognition helped with Med. Diet**

Adv Nutr. 2017 Jul 14;8(4):571-586. doi: 10.3945/an.117.015495. Print 2017 Jul.

The Impact of the Mediterranean Diet on the Cognitive Functioning of Healthy Older Adults: A Systematic Review and Meta-Analysis.

Loughrey DG¹, Lavecchia S¹, Brennan S¹, Lawlor BA¹, Kelly ME².

Evidence from epidemiologic studies suggests a relation between the Mediterranean diet (MeDi) and cognitive function, but results are inconsistent. Prior reviews have not provided pooled data from meta-analysis of longitudinal studies and randomized controlled trials (RCTs), or they included younger adult participants. This systematic review and meta-analysis examines the impact of the MeDi on the cognitive functioning of healthy older adults. Fifteen cohort studies with 41,492 participants and 2 RCTs with 309 and 162 participants in intervention and control groups, respectively, were included. The primary outcome of interest was cognitive function, divided into domains of memory and executive function. Meta-analysis of cohort studies revealed a significant association between MeDi and older adults' episodic memory ($n = 25,369$, $r = 0.01$, $P = 0.03$) and global cognition ($n = 41,492$, $r = 0.05$, $P \leq 0.001$), but not working memory ($n = 1487$, $r = 0.007$, $P = 0.93$) or semantic memory ($n = 1487$, $r = 0.08$, $P = 0.28$). Meta-analysis of RCTs revealed that compared with controls, the MeDi improved delayed recall ($n = 429$, $P = 0.01$), working memory ($n = 566$, $P = 0.03$), and global cognition ($n = 429$, $P = 0.047$), but not episodic memory ($n = 566$, $P = 0.15$), immediate recall ($n = 566$, $P = 0.17$), paired associates ($n = 429$, $P = 0.20$), attention ($n = 566$, $P = 0.69$), processing speed ($n = 566$, $P = 0.35$), or verbal fluency ($n = 566$, $P = 0.12$).

The strongest evidence suggests a beneficial effect of the MeDi on older adults' global cognition.

Coffee consumption helps respiratory problems

Clin Respir J. 2017 Jul 3. doi: 10.1111/crj.12662.

Chronic coffee consumption and respiratory disease: A systematic review.

Alfaro TM^{1,2,3}, Monteiro RA¹, Cunha RA², Cordeiro CR^{1,3}.

PURPOSE:

The widespread consumption of coffee means that any biological effects from its use can lead to significant public health consequences. Chronic pulmonary diseases are extremely prevalent and responsible for one of every six deaths on a global level.

METHODS:

Major medical databases for studies reporting on the effects of coffee or caffeine consumption on a wide range of non-malignant respiratory outcomes, including incidence, prevalence, evolution or severity of respiratory disease in adults were searched. Studies on lung function and respiratory mortality were also considered.

RESULTS:

Fifteen studies, including seven cohort, six cross-sectional, one case control and one randomized control trial were found. Coffee consumption was generally associated with a reduction in prevalence of asthma. The association of coffee with natural honey was an effective treatment for persistent post-infectious cough. One case-control study found higher risk of chronic obstructive pulmonary disease (COPD) with coffee consumption. No association was found with the evolution of COPD or sarcoidosis. Coffee was associated with a reduction in respiratory mortality, and one study found improved lung function in coffee consumers. Smoking was a significant confounder in most studies.

CONCLUSIONS:

Coffee consumption was associated with some positive effects on the respiratory system. There was however limited available evidence, mostly from cross sectional and retrospective studies. The only prospective cohort studies were those reporting on respiratory mortality. These results suggest that coffee consumption may be a part of a healthy lifestyle leading to reduced respiratory morbidity.

62 B. CRYOTHERAPY**MT better with ice**

Altern Ther Health Med. 2017 Jun 23. pii: AT5574.

Manual Therapy With Cryotherapy Versus Manual Therapy With Kinesio Taping for Males With Lumbar Discopathy: A Pilot Randomized Trial.

Lizis P, Kobza W.

Abstract

Context • Numerous modalities of therapeutic interventions exist for lumbar discopathy. Manual therapy is one option, although its effectiveness remains controversial. The addition of cryotherapy to manual therapy may enhance the health benefits in patients with lumbar discopathy.

Objective • The study intended to evaluate the efficacy of manual therapy combined with cryotherapy vs manual therapy combined with Kinesio taping for males with lumbar discopathy.

Design • The research team designed a pilot randomized trial with concealed allocation, assessor blinding, and intention-to-treat analysis.

Setting • The study occurred in the Physiotherapy Outpatient Department of the Regional Hospital (Zywiec, Poland). **Participants** • The participants were 40 males with lumbar discopathy, aged 30-75 y, who were patients in the department at the hospital. **Intervention** • The participants were randomly assigned to an intervention group that received Kaltenborn-Evjenth orthopedic manual therapy (KEOMT) combined with cryotherapy, the KEOMT-C group (n = 20), or to a control group that received KEOMT combined with Kinesio taping, the KEOMT-K group (n = 20). The participants in both groups received 10 treatments, 2 per wk for 5 wk.

Outcome Measures • The primary outcome was measured using a visual analog scale and the Laitinen scale pain ratings. The secondary outcome measured the quality of life using the short form-36 questionnaire. The participants completed the tests at baseline and postintervention.

Results • After the treatments, the intervention group had significantly lower scores than the control group for pain as well as significantly higher scores for quality of life.

Conclusions • Patients achieved better health benefits from manual therapy when it was combined with cryotherapy.