

## 7. PELVIC ORGANS/WOMAN'S HEALTH

### Exercise helps dysmenorrhea

Phys Ther. 2019 Oct 28;99(10):1371-1380. doi: 10.1093/ptj/pzz101.

#### **Therapeutic Exercise in the Treatment of Primary Dysmenorrhea: A Systematic Review and Meta-Analysis.**

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**BACKGROUND:** Dysmenorrhea is a health problem with a high impact on health and society. Some drugs have been shown to be effective at treating dysmenorrhea. Therapeutic exercise is another option for reducing the symptomatology of this health problem, with a low cost and the absence of side effects.

**PURPOSE:** The purposes of this review were to study the efficacy of physical exercise for pain intensity in primary dysmenorrhea and to assess its effectiveness in decreasing the duration of pain and improving quality of life.

**DATA SOURCES:** Searches were conducted between February 2017 and May 2017 in the databases Web of Science, Physiotherapy Evidence Database (PEDro), PubMed, Scopus, CINAHL, and Dialnet, using the terms dysmenorrhea, exercise therapy, exercise movement technique, exercise, physical therapy, physical therapy speciality, treatment, primary dysmenorrhea, prevention, etiology, epidemiology, and pain.

**STUDY SELECTION:** We included randomized controlled trial studies conducted on women who were 16 to 25 years old and had primary dysmenorrhea, studies that included exercise as a type of therapy, studies that assessed the intensity and duration of pain and quality of life, and studies published in English or Spanish. Studies that included women with irregular cycles, women diagnosed with a gynecological disease, women who had had surgery, women with serious diseases, or women who used intracavitary or oral contraceptives were excluded. We started with 455 studies; 16 were included in the systematic review, and 11 were included in the 3 meta-analyses that were carried out.

**DATA EXTRACTION:** Two authors selected the studies and extracted their characteristics (participants, intervention, comparators, and outcomes) and results. The evaluation of the methodological quality of the studies was carried out by PEDro scale.

**DATA SYNTHESIS:** There was moderate evidence that therapeutic exercise can be considered a useful tool in the treatment of primary dysmenorrhea in terms of a reduction in pain intensity. Regarding the duration of pain and quality of life, there was low evidence and very low evidence, respectively. In the 3 meta-analyses, the results were significantly positive in favor of exercise for decreases in both the intensity and the duration of pain.

#### **LIMITATIONS:**

Limitations of this study include the great heterogeneity of the interventions applied in the studies in terms of type of exercise, in combination or alone, and dosage. This review includes a small number of studies with risk of bias, so the present findings must be interpreted with caution.

#### **CONCLUSIONS:**

Therapeutic exercise reduces pain intensity in patients with primary dysmenorrhea.

**Prolapse**

Phys Ther. 2019 Jan 1;99(1):109-117. doi: 10.1093/ptj/pzy114.

**Predictors of Success for Pelvic Floor Muscle Training in Pelvic Organ Prolapse.**

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**BACKGROUND:**

Although the effectiveness of pelvic floor muscle training in women with prolapse has been demonstrated in several studies, there seem to be subgroups of responders and nonresponders.

**OBJECTIVE:**

The objective of this study was to identify factors that predict treatment success in women receiving pelvic floor muscle training for prolapse.

**DESIGN:**

The design was a secondary analysis of data from 2 randomized controlled trials comparing conservative prolapse treatments.

**METHODS:**

After 12 months, 172 women subjectively assessed treatment success ("better") or failure ("the same" or "worse"). Potential predictors were identified by a literature search and by consultation with experts in the field of urogynecology and pelvic floor muscle training. The relationship between potential predictors and treatment success was explored using logistic regression analysis.

**RESULTS:**

Treatment was successful in 94 women (55%) and unsuccessful in 78 women (45%). The presence of  $\geq 1$  indicators of obstetric trauma (eg, high birth weight, episiotomy, perineal laceration during vaginal delivery, forceps delivery, or vacuum extraction) (odds ratio = 4.4; 95% CI = 1.6-12.0) and younger age (odds ratio = 0.94 per year; 95% CI = 0.9-1.0) independently predicted treatment success. The area under the receiver operating characteristic curve for the final model was 0.65 (95% CI = 0.57-0.74), and the model explained 11.7% of the variance.

**LIMITATIONS:**

Although attempts were made to include all relevant predictors, the selection or operationalization of variables could have been incomplete or insufficient.

**CONCLUSIONS:**

Identifying women who have prolapse and are likely to benefit most from pelvic floor muscle training is of great importance to clinical practice. In this study, 2 factors that independently predicted favorable outcomes were identified with this management approach. However, further research is needed to identify other predictive factors and to validate a new model in another population.

**Endometriosis and pain**

Clin J Pain. 2019 Dec;35(12):948-957. doi: 10.1097/AJP.0000000000000757.

**Cognitive and Personality Factors Implicated in Pain Experience in Women With Endometriosis: A Mixed-Method Study.**

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**OBJECTIVE:**

The impact of pain on quality of life and mental health of women with endometriosis is well known. However, the role that personality traits and coping strategies might have in influencing pain experience is still poorly understood and was the chief purpose of this study.

**MATERIALS AND METHODS:**

We conducted a mixed-method sequential explanatory study, composed of a quantitative survey followed by qualitative interviews. The first quantitative phase included 162 women with endometriosis who completed a battery of validated questionnaires. After statistical analysis, a semistructured qualitative interview has been developed and conducted with 6 of them, in order to help explain findings obtained in the first phase. Thereafter, both analyses were combined in a metamatrix.

**RESULTS:**

From the metamatrix, it emerged that acute pain experience, fear of its occurrence, its unpredictability, and control difficulties are the main concerns of women with endometriosis. Worry trait characteristics (ie, the need for control, anticipatory anxiety, intrusive worry thoughts) and maladaptive thoughts such as coping strategies (ie, self-blame, rumination, catastrophizing) were common in this sample and seem to indirectly affect pain experience. Indeed, the unsuccessful struggle in controlling pain reinforces negative thoughts/beliefs and feelings of powerlessness, leading, in turn, to psychological distress and higher pain experience.

**DISCUSSION:**

From the study emerged a model of onset and maintenance of acute pain in women with endometriosis. Findings have clinical implications for the medical team and psychologists

## 8. VISCERA

### Vit D protective mechanisms

Helicobacter. 2019 Oct;24(5):e12655. doi: 10.1111/hel.12655. Epub 2019 Aug 14.

#### **Effect of vitamin D on Helicobacter pylori infection and eradication: A meta-analysis.**

Yang L<sup>1</sup>, He X<sup>1</sup>, Li L<sup>1</sup>, Lu C<sup>1</sup>.

##### *BACKGROUND:*

Various studies reported the relationship between Helicobacter pylori (H pylori) and vitamin D, but there is some controversy around that. This study aimed to conduct a meta-analysis to clarify the relationship between vitamin D and H pylori infection, and vitamin D and H pylori eradication.

##### *METHODS:*

Articles published until June 1, 2019, in the PubMed, MEDLINE, and EMBASE databases with English-language medical studies were searched. According to the inclusion criteria, relevant statistical data were extracted to Microsoft Excel and analyzed by STATA15.1.

##### *RESULTS:*

Ten articles were finally included. It was demonstrated that average 25(OH)D level in H pylori-positive patients was lower than H pylori-negative (SMD = -0.53 ng/mL, 95% CI = (-0.91, -0.16 ng/mL)). For H pylori eradication individuals, the result showed that average 25(OH)D level in H pylori successful eradication individuals was higher than unsuccessful (SMD = 1.31 ng/mL, 95% CI = [0.60, 2.02 ng/mL]). In addition, individuals with vitamin D deficiency had lower H pylori eradicate rate (OR = 0.09, 95% CI = [0.02, 0.41]). Sensitivity analysis showed that the meta-analysis results were stable and reliable.

##### *CONCLUSIONS:*

Vitamin D was a protective factor to H pylori infection. Moreover, vitamin D can improve the success rate of H pylori eradication.

**12 B. CERVICAL SURGERIES****Improvement in grip strength**

Clin Spine Surg. 2019 Nov;32(9):403-408. doi: 10.1097/BSD.0000000000000892.

**Improvements in Grip and Pinch Strength and Patient-reported Outcomes After Anterior Cervical Discectomy and Fusion.**

Yoo JS<sup>1</sup>, Ahn J<sup>1</sup>, Mayo BC<sup>1</sup>, Bohl DD<sup>1</sup>, Ahn J<sup>2</sup>, Hrynewycz NM<sup>1</sup>, Brundage TS<sup>1</sup>, Park DD<sup>1</sup>, Colman MW<sup>1</sup>, Phillips FM<sup>1</sup>, Singh K<sup>1</sup>.

**STUDY DESIGN:**

Prospective.

**OBJECTIVE:**

To evaluate improvements in grip and pinch strength in patients with or without myelopathy and determine patient factors that are predictive of continued postoperative grip strength weakness.

**SUMMARY OF BACKGROUND DATA:**

The degree to which cervical myelopathy can diminish upper extremity muscle strength has not been objectively characterized. Few studies have investigated the association between the expected improvements in patient-reported outcomes (PROs) and strength in grip and pinch after anterior cervical discectomy and fusion (ACDF).

**METHODS:**

Patients were asked to perform grip and pinch strength tests both preoperatively and at 6-month follow-up. Patients were also administered PRO surveys, which included Neck Disability Index, Short-Form-12 physical composite score and mental composite score, and Visual Analog Scale neck and arm pain scores. Receiver operating characteristic (ROC) curve analysis was used to determine optimum cutoff values of preoperative patient factors to predict postoperative dominant handgrip weakness after ACDF.

**RESULTS:**

Patients with radiculopathy demonstrated a significantly greater improvement in Visual Analog Scale arm pain compared with patients with myelopathy. The ROC curve analysis determined the optimum cutoff for preoperative dominant handgrip strength to be 22 kgf. This value demonstrated a sensitivity of 0.89 and a specificity of 0.62. The area under the ROC curve value was 0.71 (95% confidence interval, 0.55-0.88), indicating fair prognostic accuracy of the cutoff for postoperative dominant handgrip weakness.

**CONCLUSIONS:**

In this prospective, observational study, postoperative increase in grip and pinch strength demonstrated an association with improvement of pain and disability of the neck and overall quality of health regardless of the presence of cervical myelopathy. Preoperative grip strength weakness was found to be predictive of postoperative grip strength deficiency after ACDF. Our investigation suggests the recovery of hand function may be correlated with improvement of PROs after ACDF.

### 13 B. TMJ/ORAL

#### Reasons to retain wisdom teeth

##### **A retrospective cohort study on reasons to retain third molars**

International Journal of Oral & Maxillofacial Surgery  
De Bruyn L, et al. | November 13, 2019

In this retrospective cohort study involving 1,682 individuals, mean age 31 years, who were referred to the University Hospitals Leuven, researchers identified and quantified indications for retaining third molars, or wisdom teeth.

They identified eight reasons for retaining the third molars: risk of damaging adjacent structures, compromised health status, adequate space for eruption, third molar serves as abutment tooth, orthodontic reasons, eruption into proper occlusion, symptomless third molars in patients > 30 years old, and patient preference. For retaining third molar teeth, the most frequent reasons were: eruption into proper occlusion, patient preference, and symptomless third molars in patients > 30 years old. In the decision as to whether to retain the third molars, compromised health status and advanced age were often involved.

One third of the patients referred were justified in retaining one or more third molars. Such findings may encourage a consensus statement's future development.

## Periodontitis and stroke relationship

**Periodontitis As A Risk Factor For Stroke: A Systematic Review And Meta-Analysis**

**Authors** Fagundes NCF, Almeida APCPSC, Vilhena KFB, Magno MB, Maia LC, Lima RR

**DOI** <https://doi.org/10.2147/VHRM.S204097>

**Abstract:** This systematic review and meta-analysis investigate the association between periodontitis and stroke. This review followed the methods established by the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. Searches were conducted in five databases and two sources of grey literature. After the selection of the articles, a risk of bias evaluation was performed. Three meta-analyses were performed: Assessing the overall association between stroke and periodontitis in case-control studies; Ischemic stroke and periodontitis in case-control studies; The association between stroke and periodontitis in cohort studies. Heterogeneity was assessed using the  $I^2$  index and the odds ratio was also calculated ( $p < 0.05$ ).

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) was applied to evaluate the level of evidence. 2193 potentially relevant studies were identified, with 10 studies included in qualitative and quantitative analysis. All the articles were considered with low risk of bias and a low level of certainty.

The results demonstrated a positive association between both disorders and increased risk for stroke among cohort studies (RR 1.88 [1.55, 2.29],  $p < 0.00001$ ,  $I^2 = 0\%$ ) and for ischemic stroke events in case-control studies (RR 2.72 [2.00, 3.71],  $p < 0.00001$ ,  $I^2 = 4\%$ ).

Periodontitis may represent a risk factor for stroke, especially in ischemic events. However, new studies with a robust design are necessary for a reliable conclusion.

**13 D. SLEEP****Lack of sleep and inflammation****The Relationship Between Global Sleep Score And Inflammatory Markers In Obese Adults From The United States**

**Authors** Huang Y, Jiang Y, Zhu M

**Published** 5 November 2019 Volume 2019:11 Pages 317—324

**DOI** <https://doi.org/10.2147/NSS.S220436>

**Background:** Poor sleep is a risk factor for cardiovascular diseases (CVDs). The underlying pathogenesis is not clear. Levels of inflammatory markers, such as C-reactive protein (CRP), interleukin-6 (IL-6) and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), have been found to be elevated in patients with CVDs.

**Aim:** The study aimed to investigate the associations between sleep quality and serum inflammatory markers in a cohort of obese adults.

**Methods:** This was a second analysis of the data from the Midlife in the United States (MIDUS) study, a longitudinal study of a national (US) sample of adults. A total of 1255 participants completed comprehensive biological assessments. The associations between global sleep score and serum levels of inflammatory markers were analyzed.

**Results:** Univariate analysis showed that a higher global sleep score was correlated with lower age ( $r = -0.079$ ,  $P = 0.009$ ), higher BMI ( $r = 0.100$ ,  $P = 0.001$ ) and heavier perceived stress ( $r = 0.335$ ,  $P < 0.001$ ). Multivariate linear regression analysis showed that the global sleep score was positively related to levels of IL-6 ( $S\beta = 0.074$ ,  $P = 0.009$ ), IL-8 ( $S\beta = 0.089$ ,  $P = 0.002$ ), TNF- $\alpha$  ( $S\beta = 0.082$ ,  $P = 0.005$ ), E-selectin ( $S\beta = 0.071$ ,  $P = 0.016$ ) and intercellular adhesion molecule-1 (ICAM-1,  $S\beta = 0.117$ ,  $P < 0.001$ ) after adjustments were made for age, gender, race, marital status, education, current smoking status, physician-diagnosed CVDs and respiratory diseases, BMI and perceived stress. However, the global sleep score was not associated with serum IL-10 ( $S\beta = -0.021$ ,  $P = 0.463$ ) and CRP ( $S\beta = 0.035$ ,  $P = 0.059$ ) levels after adjustments were made for these confounding factors.

**Conclusion:** Poor sleep is positively associated with serum inflammatory marker levels among obese adults. Sufficient sleep may be particularly important for obese adults to prevent CVDs.\\



**22 A. SHOULDER IMPINGMENT****Exercise helps****An Update of Systematic Reviews Examining the Effectiveness of Conservative Physiotherapy Interventions for Subacromial Shoulder Pain**

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**Published:** *Journal of Orthopaedic & Sports Physical Therapy*,  
2019 **Volume:**0 **Issue:**0 **Pages:**1–33 **DOI:** 10.2519/jospt.2020.8498

**Study Design**

Systematic review.

**Background**

Subacromial shoulder pain (SSP) is a frequently diagnosed shoulder complaint. Management often involves an exercise programme but may include many other interventions. The aim of this review is to update the systematic review published by Littlewood et al. in 2013, which focused on evaluating the effectiveness of interventions within the scope of physiotherapy including exercise, manual therapy, electrotherapy and combined or multimodal approaches.

**Methods**

An electronic search of Pubmed, Web of Science and CINAHL was undertaken. Methodological quality was assessed using the AMSTAR-checklist for systematic reviews.

**Results**

Sixteen systematic reviews were retrieved. Methodological quality was variable. A strong recommendation can be made for exercise therapy as first-line treatment to improve pain, mobility and function in patients with SSP. Manual therapy may be integrated, with strong recommendation, as additional therapy. Moderate evidence of no effect was found for other commonly prescribed interventions, such as laser therapy, extracorporeal shock wave therapy, pulsed electromagnetic and ultrasound.

**Conclusions**

Evidence for the use of exercise therapy as an intervention for SSP is increasing and strengthening. Ongoing research is required to provide guidance on exercise type, dose, duration and expected outcomes. A strong recommendation may be made regarding the inclusion of manual therapy in the initial treatment phase. *J Orthop Sports Phys Ther*, Epub 15 Nov 2019. doi:10.2519/jospt.2020.8498

## Cortisone injections and PT

**Corticosteroid injections in the management of subacromial pain: Experiences and decision making of physiotherapists**Edward Lee<sup>a,b,\*</sup>, Claire Diver<sup>b</sup>.DOI: <https://doi.org/10.1016/j.msksp.2019.102092>**Highlights**

- Steroid injections for subacromial pain considered within an evidenced based model.
- Physiotherapist experience, patient presentation and clinical context are key factors.
- Decision making also influenced by patient values and current evidence.
- Use of injections considered within a biopsychosocial framework.

**Abstract**

**Background** Despite ongoing debate in the literature regarding their efficacy, corticosteroid injections remain a common treatment intervention for physiotherapists to consider for patients with subacromial pain. Very little is known about what factors and how clinician's experiences inform decision making in this area.

**Objectives** To investigate the experiences and decision making of physiotherapists in relation to the use of corticosteroid injections for subacromial pain.

**Design** A qualitative study using semi-structured interviews, which were then analysed using thematic analysis.

**Setting** A social enterprise organisation delivering NHS primary care musculo-skeletal physiotherapy services.

**Participants** Nine physiotherapists.

**Results**

Three broad codes were identified: (1) initial management; (2) patient factors; (3) therapist beliefs. Within these three codes, seven sub-themes were identified. Confidence in diagnosis and satisfaction that conservative management had been attempted was important. Features of a patient's presentation were key to decision making, i.e. pain severity, function and effect on sleep. Patient engagement with rehabilitation was also considered important, as was consideration of the effect of psychosocial factors. Therapist beliefs and experiences around the efficacy of corticosteroid injections was also considered influential on decision making. Some dissuasive factors were also discussed.

**Conclusion**

Some of the key factors in the decision making of physiotherapists in relation to the use of corticosteroid injections for subacromial pain have been identified, such as patient presentation and engagement, clinician experience and consideration of current literature. Further research is indicated to explore this subject further to enable better understanding around clinical decision making and the use of corticosteroid injections.

**Posterior capsule tightness**

Phys Ther. 2019 Jul 1;99(7):870-881. doi: 10.1093/ptj/pzz052.

**The Influence of Glenohumeral Joint Posterior Capsule Tightness and Impingement Symptoms on Shoulder Impairments and Kinematics.**

Rosa DP<sup>1</sup>, Borstad JD<sup>2</sup>, Ferreira JK<sup>3</sup>, Camargo PR<sup>4</sup>.

**BACKGROUND:**

Posterior capsule tightness (PCT) and shoulder impingement syndrome (SIS) symptoms are both associated with altered shoulder biomechanics and impairments. However, their combined effect on kinematics, pain, range of motion (ROM), strength, and function remain unknown.

**OBJECTIVE:**

The purpose of this study was to determine if the combination of PCT and SIS affects scapular and humeral kinematics, glenohumeral joint ROM, glenohumeral joint external rotation strength, pain, and function differently than does either factor (PCT or SIS) alone.

**DESIGN:**

The design was a cross-sectional group comparison.

**METHODS:**

Participants were placed into 1 of 4 groups based on the presence or absence of SIS and PCT: control group (n = 28), PCT group (n = 27), SIS group (n = 25), and SIS + PCT group (n = 25). Scapular kinematics and humeral translations were quantified with an electromagnetic motion capture system. Shoulder internal rotation and external rotation ROM, external rotation strength, and pain and Shoulder Pain and Disabilities Index scores were compared between groups with ANOVA.

**RESULTS:**

The SIS group had greater scapular internal rotation (mean difference = 5.13°; 95% confidence interval [CI] = 1.53°-8.9°) and less humeral anterior translation (1.71 mm; 95% CI = 0.53-2.9 mm) than the other groups. Groups without PCT had greater internal rotation ROM (16.05°; 95% CI = 5.09°-28.28°). The SIS + PCT group had lower pain thresholds at the levator scapulae muscle (108.02 kPa; 95% CI = 30.15-185.88 kPa) and the highest Shoulder Pain and Disabilities Index score (~ 44.52; 95% CI = 33.41-55.63).

**LIMITATIONS:**

These results may be limited to individuals with impingement symptoms and cannot be generalized to other shoulder conditions.

**CONCLUSIONS:**

Decreased ROM and lower pain thresholds were found in individuals with both impingement symptoms and PCT. However, the combination of factors did not influence scapular and humeral kinematics.

## 28. HIP REPLACEMENTS

### Alignment changes

#### **Are changes in radiological leg alignment and femoral parameters after total hip replacement responsible for joint loading during gait?**

Stefan van Drongelen, Hanna Kaldowski, Timur Tarhan, Ayman Assi, Andrea Meurer & Felix Stief

*BMC Musculoskeletal Disorders* volume 20, Article number: 526 (2019) Cite this article

#### Background

Gait kinematics after total hip replacement only partly explain the differences in the joint moments in the frontal plane between hip osteoarthritis patients after hip replacement and healthy controls. The goal of this study was to determine if total hip replacement surgery affects radiological leg alignment (Hip-Knee-Shaft-Angle, femoral offset, Neck-Shaft-Angle and varus/valgus alignment) and which of these parameters can explain the joint moments, additionally to the gait kinematics.

#### Methods

22 unilateral hip osteoarthritis patients who were scheduled for total hip replacement were included in the study. Preoperatively and 1 year postoperatively all patients had biplanar radiographic examinations and 3D gait analysis.

#### Results

The operated leg showed significantly ( $P < 0.05$ ) more varus ( $1.1^\circ$ ) as well as a larger femoral offset (+ 8 mm) and a larger Hip-Knee-Shaft-Angle ( $+ 1.3^\circ$ ) after total hip replacement; however no significant differences in the joint moments in the frontal plane compared to healthy controls were found. The hip moment (first half of stance) and the knee moments (first and second half of stance) were mostly determined by the varus/valgus alignment (29% and respectively 36% and 35%). The combination with a kinematic parameter (knee range of motion, foot progression angle) increased the predictive value for the knee moments.

#### Conclusion

In our patient group the joint moments after total hip replacement did not differ from healthy controls, whereas radiological leg alignment parameters changed significantly after the total hip replacement. A combination of these radiological leg parameters, especially the varus alignment, and the deviating kinematics explain the joint moments in the frontal plane during gait after total hip replacement surgery. For surgeons it is important not to create too much of a structural varus alignment by implanting the new hip joint as varus alignment can increase the knee adduction moment and the risk for osteoarthritis of the medial knee compartment.

**30 A. HIP IMPINGEMENT****MRI findings post-surgery**

AJR Am J Roentgenol. 2019 Nov 6:1-8. doi: 10.2214/AJR.19.21421.

**Postoperative MRI Findings and Associated Pain Changes After Arthroscopic Surgery for Femoroacetabular Impingement.**

Foreman SC<sup>1,2</sup>, Zhang AL<sup>3</sup>, Neumann J<sup>2</sup>, von Schacky CE<sup>1</sup>, Souza RB<sup>1</sup>, Majumdar S<sup>1</sup>, Link TM<sup>1</sup>.

**OBJECTIVE.** The purpose of this study is to describe postoperative MRI findings after femoroacetabular impingement surgery in correlation with pain changes and surgical findings.

**SUBJECTS AND METHODS.** We prospectively enrolled 42 patients (43 hips) who were scheduled for FAI surgery. Pre- and postoperative MR images were obtained using a 3-T MRI system. Changes in pain scores were assessed using the hip dysfunction and osteoarthritis outcome score. MR images were evaluated for the presence of acetabuloplasty or femoroplasty, presence of chondral and labral repair surgery, bone marrow edema, subchondral cysts, chondral defects, labral tears, capsular defects, and effusion. The optimal orientation to detect these changes was noted. Imaging findings were compared with pain score changes using linear regression analysis. Sensitivity and specificity were assessed using surgical correlation as the reference standard.

**RESULTS.** Increased acetabular bony débridement length was associated with decreased improvement in pain scores (coefficient, -2.07; 95% CI, -3.53 to -0.62;  $p = 0.008$ ), whereas other imaging findings were not significantly different. Femoroplasty and capsular alterations were best detected on oblique axial sequences; acetabuloplasty and cartilage and labral repair were best seen on sagittal sequences. MRI showed excellent sensitivity (100%) and specificity (100%) for detecting labral repair and excellent sensitivity for detecting femoroplasty (98%). Sensitivity and specificity were lower for detecting acetabuloplasty (83% and 80%, respectively) and chondral repair (75% and 54%, respectively).

**CONCLUSION.** Arthroscopic acetabuloplasty showed a greater association with postoperative pain than did other aspects of surgical correction for femoroacetabular impingement. Femoroplasty and labral repair were reliably diagnosed on 3-T MRI; however, limitations were found in the evaluation of acetabular chondral repair.

### 35. KNEE/TOTAL

Alignment seems to matter

J Arthroplasty. 2019 Sep 28. pii: S0883-5403(19)30921-0. doi: 10.1016/j.arth.2019.09.038.

#### **The Impact of Coronal Alignment on Revision in Medial Fixed-Bearing Unicompartmental Knee Arthroplasty.**

Slaven SE<sup>1</sup>, Cody JP<sup>1</sup>, Sershon RA<sup>2</sup>, Ho H<sup>2</sup>, Hopper RH Jr<sup>2</sup>, Fricka KB<sup>3</sup>.

##### *BACKGROUND:*

To better define the optimal alignment target for medial fixed-bearing unicompartmental knee arthroplasty (UKA), this study compares the postoperative mechanical alignment of well-functioning UKAs against 2 groups of failed UKAs, including revisions for progression of lateral compartment osteoarthritis ("Progression") and revisions for aseptic loosening or subsidence ("Loosening").

##### *METHODS:*

From our prospective institutional database of 3351 medial fixed-bearing UKAs performed since 2000, we identified 37 UKAs revised for Progression and 61 UKAs revised for Loosening. Each of these revision cohorts was matched based on age at surgery, gender, body mass index, and postoperative range of motion with unrevised UKAs that had at least 10 years of follow-up and a Knee Society Score of 70 or greater without subtracting points for alignment ("Success" groups). Postoperative alignment was quantified by the hip-knee-ankle (HKA) angle measured on long-leg alignment radiographs.

##### *RESULTS:*

The mean HKA angle at 4-month follow-up for the Progression group was  $0.3^\circ \pm 3.6^\circ$  of valgus compared to  $4.4^\circ \pm 2.6^\circ$  of varus for the matched Success group ( $P < 0.001$ ). For the Loosening group, the mean HKA angle was  $6.1^\circ \pm 3.1^\circ$  of varus versus  $4.0^\circ \pm 2.7^\circ$  of varus for the matched Success group ( $P < 0.001$ ).

##### *CONCLUSIONS:*

Patients with well-functioning UKAs at 10 years exhibited mild varus mechanical alignment of approximately  $4^\circ$ , whereas patients revised for progression of osteoarthritis averaged more valgus and those revised for loosening or subsidence averaged more varus. The optimal mechanical alignment for medial fixed-bearing UKA survival with contemporary polyethylene is likely slight varus.

**56. ATHLETICS****Rehabilitation****How Much? How Fast? How Soon? Three Simple Concepts for Progressing Training Loads to Minimize Injury Risk and Enhance Performance**

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- AUTHORS

Tim J. Gabbett, PT, PhD<sup>1,2</sup>

**Published:** *Journal of Orthopaedic & Sports Physical Therapy*,  
2019 **Volume:**0 **Issue:**0 **Pages:**1–9 **DOI:** 10.2519/jospt.2020.9256

**Background**

When progressing an athlete from rehabilitation to peak performance, load must exceed load-capacity. When gradual, systematic increases in load are applied, load-capacity will improve. However, if the applied load greatly exceeds load capacity, then tissue tolerance is exceeded, and injury may occur.

**Clinical Question**

It is well established that a balance exists between providing an adequate training stimulus to elicit performance benefits while also minimizing the risk of injury. How can practitioners determine how much training is too much? Following injury, how soon can training loads be progressed? How quickly can athletes return to competition?

**Key Results**

When developing rehabilitation or performance programs, three key concepts are critical: the “floor”, the “ceiling” and time. The floor represents the athlete’s current capacity, whereas the ceiling represents the capacity needed to perform the specific activities of the sport. A challenge in most sporting environments is the time required to progress from the floor to the ceiling. If athletes’ training loads are progressed too rapidly, they will be at increased risk of injury and underperformance.

**Clinical Application**

Rehabilitation practitioners should consider and plan the appropriate amount of time required to progress from the floor (e.g. rehabilitation) to the ceiling (e.g. return to performance). The resilience and robustness that comes from training takes time, and different physical capacities will adapt at different rates. Progressive, gradual, and systematic increases in training load allows athletes to safely progress to the ceiling, reducing injury risk, improving availability, and enhancing performance. *J Orthop Sports Phys Ther*, Epub 15 Nov 2019.  
*doi:10.2519/jospt.2020.9256*

**58. RUNNING****Helps CV health**

Br J Sports Med. 2019 Nov 4. pii: bjsports-2018-100493. doi: 10.1136/bjsports-2018-100493.

**Is running associated with a lower risk of all-cause, cardiovascular and cancer mortality, and is the more the better? A systematic review and meta-analysis.**

Pedisic Z<sup>1</sup>, Shrestha N<sup>2</sup>, Kovalchik S<sup>2</sup>, Stamatakis E<sup>3,4</sup>, Liangruenrom N<sup>2,5</sup>, Grgic J<sup>2</sup>, Titze S<sup>6</sup>, Biddle SJ<sup>7</sup>, Bauman AE<sup>4</sup>, Oja P<sup>8</sup>.

**OBJECTIVE:**

To investigate the association of running participation and the dose of running with the risk of all-cause, cardiovascular and cancer mortality.

**DESIGN:**

Systematic review and meta-analysis.

**DATA SOURCES:**

Journal articles, conference papers and doctoral theses indexed in Academic Search Ultimate, CINAHL, Health Source: Nursing/Academic Edition, MasterFILE Complete, Networked Digital Library of Theses and Dissertations, Open Access Theses and Dissertations, PsycINFO, PubMed/MEDLINE, Scopus, SPORTDiscus and Web of Science.

**ELIGIBILITY CRITERIA FOR SELECTING STUDIES:**

Prospective cohort studies on the association between running or jogging participation and the risk of all-cause, cardiovascular and/or cancer mortality in a non-clinical population of adults were included.

**RESULTS:**

Fourteen studies from six prospective cohorts with a pooled sample of 232 149 participants were included. In total, 25 951 deaths were recorded during 5.5-35 year follow-ups. Our meta-analysis showed that running participation is associated with 27%, 30% and 23% lower risk of all-cause (pooled adjusted hazard ratio (HR)=0.73; 95% confidence interval (CI) 0.68 to 0.79), cardiovascular (HR=0.70; 95% CI 0.49 to 0.98) and cancer (HR=0.77; 95% CI 0.68 to 0.87) mortality, respectively, compared with no running. A meta-regression analysis showed no significant dose-response trends for weekly frequency, weekly duration, pace and the total volume of running.

**CONCLUSION:**

Increased rates of participation in running, regardless of its dose, would probably lead to substantial improvements in population health and longevity. Any amount of running, even just once a week, is better than no running, but higher doses of running may not necessarily be associated with greater mortality benefits.



**60. COMPLEX REGIONAL PAIN****Pediatrics CRP**

Clin J Pain. 2019 Dec;35(12):933-940. doi: 10.1097/AJP.0000000000000759.

**Clinical Features of Pediatric Complex Regional Pain Syndrome: A 5-Year Retrospective Chart Review.**

Mesaroli G<sup>1,2</sup>, Ruskin D<sup>3</sup>, Campbell F<sup>4</sup>, Kronenberg S<sup>5,5</sup>, Klein S<sup>1</sup>, Hundert A<sup>6</sup>, Stinson J<sup>6,7</sup>.

**OBJECTIVES:**

Complex regional pain syndrome (CRPS) is a painful condition of a limb characterized by a constellation of symptoms. Little is known about the clinical features of pediatric CRPS, with fewer than a dozen studies published to date. The aim of this study was to explore the clinical course of pediatric CRPS, with emphasis on clinical features and disease outcomes. A secondary aim was to discern differences in clinical features of pediatric CRPS with and without related movement disorders, and between children who had a favorable and unfavorable outcome.

**MATERIALS AND METHODS:**

We carried out a retrospective chart review of children with CRPS who presented to a pediatric Chronic Pain Clinic in Canada over a 5-year period (2012 to 2016).

**RESULTS:**

The study identified 59 children with CRPS (mean age: 12.7±2.5; 74.6% female; 72.9% lower extremity). In total, 87% (n=48) of children experienced complete resolution or significant improvement of CRPS, with a relapse rate of 15%. Overall, 25% (n=15) had a CRPS-related movement disorder. There were no differences in the clinical features of pediatric CRPS with or without related movement disorders. Children who experienced a favorable outcome had a significantly shorter symptom duration at the initial visit in comparison with children who experienced an unfavorable outcome.

**DISCUSSION:**

In this cohort, pediatric CRPS was most common in girls around the age of 12, usually in the lower extremity, and most experienced a favorable outcome. Further research is needed to better understand the prognosis and relapse rate of pediatric CRPS.

**65. NEUROLOGICAL CONDITIONS****MS and core ex**

Phys Ther. 2019 Aug 1;99(8):1027-1038. doi: 10.1093/ptj/pzz017.

**Group-Based Individualized Comprehensive Core Stability Intervention Improves Balance in Persons With Multiple Sclerosis: A Randomized Controlled Trial.**

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**BACKGROUND:** Balance and trunk control are often impaired in individuals with multiple sclerosis (MS). Interventions addressing these issues are needed.

**OBJECTIVE:** The objective of this study was to compare the immediate and long-term effects of a 6-week individualized, group-based, comprehensive core stability intervention (GroupCoreDIST) with standard care on balance and trunk control in individuals with MS.

**DESIGN:** This study was a prospective, assessor-masked, randomized controlled trial.

**SETTING:** The GroupCoreDIST intervention was conducted by 6 physical therapists in 6 municipalities in Norway. Standard care included the usual care for individuals with MS in the same municipalities. Assessments at all time points took place at a Norwegian hospital.

**PARTICIPANTS:** Eighty people with Expanded Disability Status scores of 1 to 6.5 participated in this trial.

**INTERVENTION:**

Randomized, concealed allocation was used to assign the participants to the GroupCoreDIST intervention (n = 40) or to standard care (n = 40). The GroupCoreDIST intervention was conducted with groups of 3 participants (1 group had 4 participants), for 60 minutes 3 times per week.

**MEASUREMENTS:**

Assessments were undertaken at baseline and at weeks 7, 18, and 30. Outcomes were measured with the Trunk Impairment Scale-Norwegian Version, Mini Balance Evaluation Systems Test, and Patient Global Impression of Change-Balance. Repeated-measures mixed models were used for statistical analysis.

**RESULTS:**

One individual missed all postintervention tests, leaving 79 participants in the intention-to-treat analysis. GroupCoreDIST produced significant between-group effects on the mean difference in the following scores at 7, 18, and 30 weeks: for Trunk Impairment Scale-Norwegian Version, 2.63 points (95% confidence interval [CI] = 1.89-3.38), 1.57 points (95% CI = 0.81-2.33), and 0.95 point (95% CI = 0.19-1.71), respectively; for Mini Balance Evaluation Systems Test, 1.91 points (95% CI = 1.07-2.76), 1.28 points (95% CI = 0.42-2.15), and 0.91 points (95% CI = 0.04-1.77), respectively; and for Patient Global Impression of Change-Balance, 1.21 points (95% CI = 1.66-0.77), 1.02 points (95% CI = 1.48-0.57), and 0.91 points (95% CI = 1.36-0.46), respectively.

**LIMITATIONS:**

Groups were not matched for volume of physical therapy.

**CONCLUSIONS:**

Six weeks of GroupCoreDIST improved balance and trunk control in the short and long terms compared with standard care in individuals who were ambulant and had MS. The intervention is an effective contribution to physical therapy for this population.