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LBP**LBP and Catastrophizing**

Spine J. 2014 Nov 1;14(11):2639-57. doi: 10.1016/j.spinee.2014.03.003. Epub 2014 Mar 7.

Catastrophizing-a prognostic factor for outcome in patients with low back pain: a systematic review.

Wertli MM¹, Eugster R², Held U², Steurer J², Kofmehl R², Weiser S³.

Abstract**BACKGROUND CONTEXT:**

Psychological factors including catastrophizing thoughts are believed to influence the development of chronic low back pain (LBP).

PURPOSE:

To assess the prognostic importance of catastrophizing as a coping strategy in patients with LBP.

STUDY DESIGN: *This is a systematic review.*

PATIENT SAMPLE:

This study included patients with LBP.

OUTCOME MEASURES:

Work-related outcomes and perceived measures including return to work, pain, and disability.

METHODS:

In September 2012, the following databases were searched: BIOSIS, CINAHL, Cochrane Library, Embase, OTSeeker, PeDRO, PsycInfo, Medline, Scopus, and Web of Science. To ensure completeness of the search, a hand search and a search of bibliographies were conducted and all relevant references included. All observational studies investigating the prognostic value of catastrophizing in patients with LBP were eligible. Included were studies with 100 and more patients and follow-up of at least 3 months. Excluded were studies with poor methodological quality, short follow-up duration, and small sample size.

RESULTS:

A total of 1,473 references were retrieved, and 706 references remained after the removal of duplicates. For 77 references, the full text was assessed and 19 publications based on 16 studies were included. Of four studies that investigated work-related outcomes, two found catastrophizing to be associated with work status. Most studies that investigated self-reported outcome measures (n=8, 66%) found catastrophizing to be associated with pain and disability at follow-up in acute, subacute, and chronic LBP patients. In most studies that applied cutoff values, patients identified as high catastrophizers experienced a worse outcome compared with low catastrophizers (n=5, 83%).

CONCLUSIONS:

There is some evidence that catastrophizing as a coping strategy might lead to delayed recovery. The influence of catastrophizing in patients with LBP is not fully established and should be further investigated. Of particular importance is the establishment of cutoff levels for identifying patients at risk.

KEYWORDS: *Back pain; Catastrophizing; Fear avoidance; Fear-avoidance beliefs; Low back pain; Prognosis; Prognostic factor PMID: 24607845*

LBP and motor strategies

Spine (Phila Pa 1976). 2014 Dec 15;39(26):E1608-15. doi: 10.1097/BRS.0000000000000628.

The effect of chronic low back pain on trunk accuracy in a multidirectional isometric tracking task.

Hadizadeh M¹, Mousavi SJ, Sedaghatnejad E, Talebian S, Parnianpour M.

Abstract***STUDY DESIGN:***

A cross-sectional study to quantify trunk motor control during multidirectional isometric tracking tasks.

OBJECTIVE:

To investigate the effect of chronic low back pain (LBP) on trunk neuromuscular performance while participants performed isometric exertions of trunk muscles to track targets in different angles with various magnitudes.

SUMMARY OF BACKGROUND DATA:

Tracking tasks especially in multidirectional activities are among the common research methods to quantify human motor control in different conditions. However, little information is available on trunk motor control during these tasks. There is no study investigating trunk accuracy during multidirectional isometric tracking tasks in patients with LBP.

MATERIALS AND METHODS:

Twelve patients with chronic LBP and 16 asymptomatic participants performed isometric target tracking tasks in 12 different directions with varying magnitude, from 0% to 80% of individual maximum voluntary exertion, in upright standing posture. The tracking system included a moving target object that moved on a straight line in a predefined angle with the rate of 6% maximum voluntary exertion/s. Trunk accuracy was quantified by computing constant error and variable error during each trial. A mixed model repeated measure analysis of variance was conducted to assess statistical analysis.

RESULTS:

Patients with chronic LBP track the target object with higher error compared with healthy controls across almost all of the target angles ($P < 0.01$). Trunk accuracy decreased significantly in higher level of exertions ($P < 0.01$).

CONCLUSION:

The results provided additional evidence of a change in trunk control strategies in patients with chronic LBP. Decreased accuracy of trunk during isometric tracking tasks especially in higher levels of asymmetric exertions may explain higher risk of low back injuries in these activities.

LEVEL OF EVIDENCE: 4.

PMID: 25271509

LBP and elderly PT

Phys Ther. 2014 Oct 2. [Epub ahead of print]

Patient-Reported Outcomes Associated With Use of Physical Therapy Services by Older Adults With a New Visit for Back Pain.

Rundell SD¹, Sherman KJ², Heagerty PJ³, Mock C⁴, Jarvik JG⁵.

Abstract**BACKGROUND:**

Among older adults, it is not clear how different types or amounts of physical therapy may be associated with improvements in back pain and function.

OBJECTIVE:

The study objective was to investigate the association between types or amounts of physical therapy services and 1-year outcomes among older adults with back pain.

DESIGN:

This was a prospective cohort study.

METHODS:

A total of 3,771 older adults who were enrolled in a cohort study and who had a new primary care visit for back pain participated. Physical therapy use was ascertained from electronic health records. The following patient-reported outcomes were collected over 12 months: back-related disability (Roland-Morris Disability Questionnaire) and back and leg pain intensity (11-point numerical rating scale). Marginal structural models were used to estimate average effects of different amounts of physical therapy use on disability and pain for all types of physical therapy and for active, passive, and manual physical therapy.

RESULTS:

A total of 1,285 participants (34.1%) received some physical therapy. There was no statistically significant gradient in relationships between physical therapy use and back-related disability score. The use of passive or manual therapy was not consistently associated with pain outcomes. Higher amounts of active physical therapy were associated with decreased back and leg pain and increased odds of clinically meaningful improvements in back and leg pain relative to results obtained with no active physical therapy.

LIMITATIONS:

The fact that few participants had high amounts of physical therapy use limited precision and the ability to test for nonlinear relationships for the amount of use.

CONCLUSIONS:

Higher amounts of active physical therapy were most consistently related to the greatest improvements in pain intensity; however, as with all observational studies, the results must be interpreted with caution.

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PMID: 25278334

Muscle activity in LBP

A comparison of lumbopelvic motion patterns and erector spinae behavior between asymptomatic subjects and patients with recurrent low back pain during pain-free periods

Journal of Manipulative and Physiological Therapeutics, 12/15/2014 Clinical Article

Sanchez-Zuriaga D, et al.

The purpose of this study was to determine the patterns of lumbopelvic motion and erector spinae (ES) activity during trunk flexion–extension movements and to compare these patterns between patients with recurrent low back pain (LBP) in their pain–free periods and matched asymptomatic subjects. This study showed that reduced maximum ranges of motion and absence of ES flexion–relaxation phenomenon were not useful to identify LBP patients in the absence of acute pain. However, these patients showed subtle alterations of their lumbopelvic motion and ES activity patterns, which may have important clinical implications.

Methods

- Thirty subjects participated (15 patients with disc herniation and recurrent LBP in their pain-free periods and 15 asymptomatic control subjects).
- A 3-dimensional videophotogrammetric system and surface electromyography (EMG) were used to record the angular displacements of the lumbar spine and hip in the sagittal plane and the EMG activity of the ES during standardized trunk flexion-extension cycles.
- Variables were maximum ranges of spine and hip flexion; percentages of maximum lumbar and hip flexion at the start and end of ES relaxation; average percentages of EMG activity during flexion, relaxation, and extension; and flexion-extension ratio of myoelectrical activity.

Results

- Recurrent LBP patients during their pain-free period showed significantly greater ES activation both in flexion and extension, with a higher flexion-extension ratio than controls.
- Maximum ranges of lumbar and hip flexion showed no differences between controls and patients, although patients spent less time with their lumbar spine maximally flexed.

INJECTIONS

Epidurals and radicular symptoms

Pain Med. 2014 Apr;15(4):548-55. doi: 10.1111/pme.12325. Epub 2014 Jan 2.

Comparative effectiveness of lumbar transforaminal epidural steroid injections with particulate versus nonparticulate corticosteroids for lumbar radicular pain due to intervertebral disc herniation: a prospective, randomized, double-blind trial.

Kennedy DJ¹, Plastaras C, Casey E, Visco CJ, Rittenberg JD, Conrad B, Sigler J, Dreyfuss P.

Abstract

BACKGROUND:

Lumbar transforaminal epidural injections are commonly utilized to treat radicular pain due to intervertebral disc herniation.

OBJECTIVE:

This study aims to determine if there was a major difference in effectiveness between particulate and nonparticulate corticosteroids for acute radicular pain due to lumbar disc herniation.

DESIGN:

A multicenter, double blind, prospective, randomized trial on 78 consecutive subjects with acute uni-level disc herniation resulting in unilateral radicular pain. All subjects received a single level transforaminal epidural steroid injection with either dexamethasone or triamcinolone. Repeat injections were allowed as determined by the blinded physician and subjects. Primary outcomes included: number of injections received, surgical rates, and categorical pain scores at 2 weeks, 3 months, and 6 months. Secondary outcomes included mean Oswestry Disability Index.

RESULTS:

Both triamcinolone and dexamethasone resulted in statically significant improvements in pain and function at 2 weeks, 3 months, and 6 months, without clear differences between groups. The surgical rates were comparable with 14.6% of the dexamethasone group and 18.9% of the triamcinolone group receiving surgery. There was a statistically significant difference in the number of injections received, with 17.1% of the dexamethasone group receiving three injections vs only 2.7% of the triamcinolone group.

CONCLUSIONS:

Transforaminal epidural corticosteroid injections are an effective treatment for acute radicular pain due to disc herniation, and frequently only require 1 or 2 injections for symptomatic relief. Dexamethasone appears to possess reasonably similar effectiveness when compared with triamcinolone. However, the dexamethasone group received slightly more injections than the triamcinolone group to achieve the same outcomes.

Wiley Periodicals, Inc.

KEYWORDS: *Corticosteroid; Dexamethasone; Disc Herniation; Lumbar; Particulate; Radicular Pain; Radiculopathy; Transforaminal Epidural Injection; Triamcinolone*

PMID: 24393129

PELVIC ORGANS

Egg consumption and ovarian cancer

Clin Nutr. 2014 Jul 23. pii: S0261-5614(14)00185-X. doi: 10.1016/j.clnu.2014.07.009. [Epub ahead of print]

Egg consumption is associated with increased risk of ovarian cancer: Evidence from a meta-analysis of observational studies.

Zeng ST¹, Guo L², Liu SK¹, Wang DH¹, Xi J¹, Huang P¹, Liu DT¹, Gao JF¹, Feng J¹, Zhang L¹.

Abstract

BACKGROUND:

The findings of epidemiologic studies on the association between egg consumption and ovarian cancer risk remain conflicting. The aim of this meta-analysis was to investigate whether an association exists between egg intake and ovarian cancer risk in epidemiologic studies.

METHODS:

A literature search was carried out using PUBMED, EMBASE, and Cochrane Library Central database for all medical literature published in English-language journals up to August 2013. Before meta-analysis, between-study heterogeneity and publication bias were assessed using adequate statistical tests. Fixed-effect and random-effect models were used to estimate summary relative risks (RR) and the corresponding 95% confidence intervals (CIs). Subgroup analyses and sensitivity analysis were also performed.

RESULTS:

A total of 12 eligible studies (six case-control studies and six cohort studies) were included, involving 629,453 subjects and 3728 ovarian cancer cases. We found that high egg intake (comparing the highest with the lowest category) was associated with a significant increased risk of ovarian cancer (RR = 1.21, 95% CI [1.06, 1.38]). When we examined whether the associations differed by study type, statistically significant effect of egg intake on ovarian cancer was observed among case-control studies (RR = 1.22, 95% CI [1.03, 1.43]), but not among cohort studies (RR = 1.20, 95% CI [0.97, 1.48]).

CONCLUSIONS:

Our findings suggest that egg consumption may increase ovarian cancer risk. Additional studies, especially large prospective cohort studies, are warranted to confirm the findings.

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KEYWORDS: *Dietary; Egg; Epidemiology; Meta-analysis; Ovarian cancer*

PMID: 25108572

CERVICAL SPINE

Movement behaviour

Eur Spine J. 2014 Dec 10.

Age-related cutoffs for cervical movement behaviour to distinguish chronic idiopathic neck pain patients from unimpaired subjects.

Niederer D¹, Vogt L, Wilke J, Rickert M, Banzer W.

Abstract

PURPOSE:

The present study aims to develop age-dependent cutoff values in a quasi-experimental, cross-sectional diagnostic test study.

METHODS:

One hundred and twenty (120) asymptomatic subjects (n = 100, 36♀, 18-75 years, for normative values; n = 20, 23-75 years, 15♀, for selectivity analyses) and 20 patients suffering from idiopathic neck pain (selectivity analyses, 22-71 years, 15♀) were included. Subjects performed five repetitive maximal cervical flexion/extension movements in an upright sitting position. Cervical kinematic characteristics (maximal range of motion (ROM), coefficient of variation (CV) and mean conjunct movements in rotation and flexion (CM)) were calculated from raw 3D ultrasonic data. Regression analyses were conducted to reveal associations between kinematic characteristics and age and gender and thus to determine normative values for healthy subjects.

RESULTS:

Age explains 53 % of the variance in ROM (decrease 10.2° per decade), 13 % in CV (increase 0.003 per decade) and 9 % in CM (increase 0.57° per decade). Receiver operating characteristic (ROC) analyses were conducted for differences between individual values of the kinematic characteristics and normative values to optimise cutoff values for distinguishing patients from unimpaired subjects (20 patients and 20 healthy). Cutoff values distinguished asymptomatic subjects' and chronic nonspecific neck patient's movement characteristics with sufficient quality (sensitivity 70-80 %, specificity 65-70 %).

CONCLUSIONS:

By including such classifications, the present findings expand actual research stating an age-related decrease in kinematic behaviour only using categorising span widths across decades. Future study is warranted to reveal our results' potential applicability for intervention onset decision making for idiopathic neck pain patients.

PMID: 25490881

HEADACHES

Anxiety and depression

BMC Neurol. 2014 Dec 14;14(1):238.

Combination of anxiety and depression is associated with an increased headache frequency in migraineurs: a population-based study.

Oh K, Cho SJ, Chung Y, Kim JM, Chu M.

Abstract

Background Although anxiety and depression have been classified as distinct traits of affective disorders, previous studies have reported their co-occurrence in subjects with migraine. However, few reports are available on the clinical implications of this comorbidity. This study is to assess the comorbidity of anxiety and depression in subjects with migraine and its clinical implications in a population-based sample from Korea.

Methods We selected Korean subjects aged 19-69 years by the stratified random sampling method, and evaluated them using a semi-structured interview, designed to identify headache type, anxiety, and depression. We used Goldberg Anxiety Scale questions and Patient Health Questionnaire-9 for the diagnosis of anxiety and depression, respectively.

Results Of the 2,762 participants who completed the interview, 147 subjects (5.4%) were classified as having a migraine during the previous year. Among these 147 subjects, 17 (11.6%) had anxiety and depression, 28 (19.0%) had anxiety alone, 9 (6.1%) had depression alone, and 93 (63.3%) had neither anxiety nor depression. Headache frequency per month was remarkably higher in subjects having migraine with anxiety and depression (median [25-75 percentile values], 8.0 [2.5-21.0]) than in those having migraine with anxiety alone (2.0 [1.0-5.0], $p=0.003$), migraine with depression alone (1.0 [0.3-4.0], $p=0.001$), and migraine without anxiety or depression (1.0 [0.3-3.0], $p<0.001$). The migraine with anxiety alone (7.0 [6.0-8.0], $p=0.011$) group and migraine with anxiety and depression (7.0 [5.0-9.0], $p=0.018$) group showed higher Visual Analogue Scale scores for pain intensity compare to migraine without anxiety or depression (6.0 [5.0-7.0]) group.

Conclusions Approximately 1/3 of migraineurs with anxiety had depression and 2/3 of migraineurs with depression had anxiety. Combination of anxiety and depression was associated with an increased headache frequency. Anxiety was associated with exacerbation of headache intensity.

PMIDm25494868

IMPINGEMENT

Hip impingement in athletes

Am J Sports Med. 2014 Mar;42(3):737-51. doi: 10.1177/0363546513499136. Epub 2013 Aug 27.

Femoroacetabular impingement in athletes: current concepts.

Byrd JW¹.

Abstract

Hip disorders are increasingly recognized as a cause of dysfunction and disability among athletes. Femoroacetabular impingement (FAI) is a common source of hip problems. While FAI may sometimes be present as an incidental asymptomatic finding, substantial secondary joint damage may occur. This problem is often observed in young adult, and even adolescent, athletes. FAI morphology results in a breakdown of the labrum and articular surfaces from forces generated during sporting activities that would otherwise be well tolerated by a normal joint. A description of the pathomechanics is included. Detection of pathological FAI is important to minimize its harmful effects. The history, examination findings, and pertinent imaging studies are detailed. Nonoperative measures, including training modifications and pelvic stabilization exercises, may be of some benefit in modulating symptoms. When secondary joint damage has occurred, surgical intervention is usually necessary. While most can be managed with arthroscopic techniques, open and mini-open methods are discussed as well.

With proper recognition and treatment, most athletes can expect to return to sports, although the long-term implications of high-level activities must still be considered. These results are summarized.

KEYWORDS: *athletes; femoroacetabular impingement; hip arthroscopic surgery*

PMID: 23982400

KNEE**Muscle inhibition with joint effusion****Quadriceps arthrogenic muscle inhibition: the effects of experimental knee joint effusion on motor cortex excitability****David Andrew Rice^{1,2*}, Peter John McNair¹, Gwyn Nancy Lewis¹ and Nicola Dalbeth³***Arthritis Research & Therapy* 2014, **16**:502 doi:10.1186/s13075-014-0502-4**Abstract**

Introduction Marked weakness of the quadriceps muscles is typically observed following injury, surgery or pathology affecting the knee joint. This is partly due to ongoing neural inhibition that prevents the central nervous system from fully activating the quadriceps, a process known as arthrogenic muscle inhibition (AMI). This study aimed to further investigate the mechanisms underlying AMI by exploring the effects of experimental knee joint effusion on quadriceps corticomotor and intracortical excitability.

Methods Seventeen healthy volunteers participated in this study. Transcranial magnetic stimulation was used to measure quadriceps motor evoked potential area, short-interval intracortical inhibition, intracortical facilitation and cortical silent period duration before and after experimental knee joint effusion. Joint effusion was induced by the intraarticular infusion of dextrose saline into the knee.

Results There was a significant increase in quadriceps motor evoked potential area following joint infusion, both at rest ($P=0.01$) and during voluntary muscle contraction ($P=0.02$). Cortical silent period duration was significantly reduced following joint infusion ($P=0.02$). There were no changes in short interval intracortical inhibition or intracortical facilitation over time (all $P>0.05$).

Conclusions The results of this study provide no evidence for a supraspinal contribution to quadriceps AMI. Paradoxically, but consistent with previous observations in patients with chronic knee joint pathology, quadriceps corticomotor excitability increased after experimental knee joint effusion. The increase in quadriceps corticomotor excitability may be at least partly mediated by a decrease in gamma-aminobutyric acid (GABA)-ergic inhibition within the motor cortex.

KNEE/ACL

Sensory function and position

Association between sensory function and medio-lateral knee position during functional tasks in patients with anterior cruciate ligament injury

Anna Cronström and Eva Ageberg

BMC Musculoskeletal Disorders 2014, **15**:430 doi:10.1186/1471-2474-15-430

Background

Patients with anterior cruciate ligament (ACL) injury often exhibit reduced movement quality during functional tasks in the form of a knee-medial-to-foot position (KMFP). This movement pattern is suggested to be more common in women than in men, but the possible contributing sensorimotor factors for this altered knee position are poorly studied in these patients. The aim of this study was to evaluate the association between sensory function and medio-lateral knee position during functional tasks in men and women with ACL injury.

Methods

Fifty-one patients (23 women) aged 18-40 years with ACL injury were included in this cross-sectional study. Measures of sensory function were assessed by the threshold to detection of passive motion (TDPM) for knee kinesthesia and by the vibration perception threshold (VPT) for vibration sense. Movement quality was assessed by visual observation of the position of the knee relative to the foot during the following four functional tasks with different degrees of difficulty: the single-limb mini-squat, stair descending, the forward lunge, and the drop-jump. Spearman's rank correlation coefficient was used to determine the relationship between the sensory measures and the medio-lateral knee position during the functional tasks. Differences in TDPM and/or VPT between subjects with good and poor movement quality were evaluated using the independent t-test. Separate gender analyses were performed.

Results

Worse TDPM was associated with a KMFP during the drop jump in men. Worse VPT at the toe and ankle was associated with a KMFP during stair descending and the forward lunge in women, but no associations were found in men.

Conclusion

Worse kinesthesia, measured by TDPM, might be associated with KMFP during the drop jump in men with ACL injury while worse vibration sense, measured by the VPT, at the foot and ankle might be related to KMFP in women. Further studies are needed to confirm these results.

MENISCUS**Lateral meniscus tears with ACL**Knee Surgery, Sports Traumatology, Arthroscopy

December 2014 Date: 12 Dec 2014

Different patterns of lateral meniscus root tears in ACL injuries: application of a differentiated classification system

- [Philipp Forkel](#), [Sven Reuter](#), [Frederike Sprenker](#), [Andrea Achtnich](#), [Elmar Herbst](#), [Andreas Imhoff](#), [Wolf Petersen](#)

[Buy now](#)**Purpose**

Posterior lateral meniscus root tears (PLMRTs) affect the intra-articular pressure distribution in the lateral compartment of the knee. The biomechanical consequences of these injuries are significantly influenced by the integrity of the meniscofemoral ligaments (MFLs). A newly introduced arthroscopic classification system for PLMRTs that takes MFL integrity into account has not yet been clinically applied but may be useful in selecting the optimal method of PLMRT repair.

Methods

Prospective ACL reconstruction data were collected. Concomitant injuries of the lateral meniscus posterior horn were classified according to their shape and MFL status. The classifications were: type 1, avulsion of the root; type 2, radial tear of the lateral meniscus posterior horn close to the root with an intact MFL; and type 3, complete detachment of the posterior meniscus horn.

Results

Between January 2011 and May 2012, 228 consecutive ACL reconstructions were included. Lateral and medial meniscus tears were identified in 38.2 % ($n = 87$) and 44.7 % ($n = 102$), respectively. Of the 87 lateral meniscus tears, 32 cases had PLMRTs; the overall prevalence of PLMRTs was 14 % ($n = 32$). Two medial meniscus root tears were detected. All PLMRTs were classified according to the classification system described above, and the fixation procedure was adapted to the type of meniscus tear.

Conclusion

The PLMRT tear is a common injury among patients undergoing ACL repair and can be arthroscopically classified into three different types. Medial meniscus root tears are rare in association with ACL tears. The PLMRT classification presented here may help to estimate the injury's impact on the lateral compartment and to identify the optimal treatment. These tears should not be overlooked, and the treatment strategy should be chosen with respect to the type of root tear.

Level of evidence **IV**.

Function and articular cartilage lesions

Knee Surgery, Sports Traumatology, Arthroscopy

December 2014

Symptoms and function in patients with articular cartilage lesions in 1,000 knee arthroscopies

- Eirik Solheim, Arne Magnus Krokeide, Peder Melteig, Allan Larsen, Torbjørn Strand,
- Mats Brittberg 

Abstract

Purpose

Focal chondral lesions of the knee are commonly occurring. A lot is known about their frequency, size and localisation in arthroscopic series, but less about the symptoms they elicit and little about how the arthroscopic findings and symptoms correlate. The purposes of the present study included to investigate the relationship between articular cartilage lesion factors and patient factors, and to compare the symptoms and function of cartilage lesion patients to those of patients with a deficient ACL.

Methods

A prospective registration was conducted of preoperative data including Lysholm knee score and perioperative findings in 1,000 consecutive patients undergoing an arthroscopic procedure of the knee—including microfracture of articular cartilage defects and ACL reconstructions.

Results

Chondral or osteochondral lesions were found in 57 % of the arthroscopies. The mean Lysholm score in this subgroup was 55. The mean Lysholm score was significantly lower in women (50, SD 19) compared to men (59, SD 18, $p < 0.001$). Among the chondral lesion factors, only kissing (vs. non-kissing) lesions and multiple (vs. single) lesions influenced symptoms and function to a more than negligible degree. Microfracture in one or two articular cartilage defects was performed in 187 patients. The microfracture group had a significant lower mean Lysholm score (54, SD 18) than a group of patients ($N = 71$) undergoing ACL reconstruction group (67, SD 17, $p < 0.001$).

Conclusion

The study confirms that articular cartilage lesions are both common and cumbersome. Women seem to have more problems than men, whereas chondral lesion factors—such as localisation and size—seem to influence symptoms and function to a small degree. These aspects should be addressed when designing outcome studies, and should also be of interest to the orthopaedic surgeon—in the day-by-day clinical work. When treating these patients, our prime focus need to be on knee function rather than the cartilage defect as the relationship between the latter and the former is unclear.

Level of evidence **Case-control study, Level III.**

PATELLA

BMC Musculoskelet Disord. 2014 Dec 12;15(1):426.

Joint motion quality in vibroacoustic signal analysis for patients with patellofemoral joint disorders.

B Czkowicz D, Majorczyk E.

Abstract**BACKGROUND:**

Chondromalacia, lateral patellar compression syndrome and osteoarthritis are common patellofemoral joint disorders leading to functional and/or structural disturbances in articular surfaces. The objective of the study was to evaluate their impact on joint motion quality via the vibroacoustic signal generated during joint movement analysis.

METHODS:

Seventy-three patients (30 with chondromalacia, 21 with lateral patellar compression syndrome, and 22 with osteoarthritis) and 32 healthy controls were tested during flexion/extension knee motion for vibroacoustic signals using an acceleration sensor. Estimated parameters: variation of mean square (VMS), difference between mean of four maximum and mean of four minimum values (R4), power spectral density for frequency of 50-250 Hz (P1) and 250-450 Hz (P2) were analyzed.

RESULTS:

Vibroacoustic signals recorded for particular disorders were characterized by significantly higher values of parameters in comparison to the control group. Moreover, differences were found among the various types of patellofemoral joint disturbances. Chondromalacia and osteoarthritis groups showed differences in all parameters examined. In addition, osteoarthritis patients exhibited differences in VMS, P1 and P2 values in comparison to lateral patellar compression syndrome patients. However, only the value of R4 was found to differ between knees with lateral patellar compression syndrome and those with chondromalacia.

CONCLUSION:

Our results suggest that particular disorders are characterized by specific vibroacoustic patterns of waveforms as well as values of analyzed parameters.

PMID: 25496721

FOOT AND ANKLE

Motor control and ankle sprain

BMC Musculoskelet Disord. 2014 Dec 16;15(1):436.

Alteration in global motor strategy following lateral ankle sprain.

Bastien M, Moffet H, Bouyer LJ, Perron M, Hébert LJ, Leblond J.

Abstract

BACKGROUND:

Lateral ankle sprain (LAS) has often been considered an injury leading to localized joint impairments affecting the musculoskeletal system. Persistent chronic ankle instability and bilateral alterations in motor control after a first ankle sprain episode suggest that the origin of relapses might be a maladaptive reorganization of central motor commands. The objectives of this study were (1) to compare the quality of motor control through motor strategy variables of two groups (with and without LAS) from a military population (n = 10/group), (2) to evaluate the contribution of the lower limbs and the trunk to global body strategy and (3) to identify which global variable best estimates performance on the Star Excursion Balance Test (SEBT) for each group, reaching direction, and lower limb.

METHODS:

Personal and clinical characteristics of the participants of both groups were collected. Their functional ability was measured using questionnaires and they performed a series of functional tests including the SEBT. During this test, the maximal reach distance (MRD) and biomechanical data were collected to characterize whole body and segmental strategies using a 3D motion capture system.

RESULTS:

At maximal lower limb reach, participants with LAS had a smaller variation in their vertical velocity in lowering-straightening and lowered the body centre of mass less for all injured limb conditions and some conditions with the uninjured lower limb. The global body centre of mass variables were significantly correlated to SEBT performance (MRD).

CONCLUSION:

Modifications in global motor strategies were found in participants with LAS as well as a decreased performance on the SEBT for the injured and uninjured lower limbs. These results support the hypothesis that following LAS, there may be a maladaptive reorganization of the central motor commands. Level of evidence: 3b.

PMID: 25515309

MANUAL THERAPY

MT for neck pain

Man Ther. 2014 Dec;19(6):549-54. doi: 10.1016/j.math.2014.05.011. Epub 2014 Jun 7.

The clinical significance of immediate symptom responses to manual therapy treatment for neck pain: Observational secondary data analysis of a randomized trial.

Trott CA¹, Ruiz Aguila ME², Leaver AM³.

Abstract

The objective was to explore aspects of symptom responses to manual therapy treatment for neck pain. An observational secondary data analysis of a randomized trial was conducted. 181 participants seeking care from a physiotherapist or chiropractor for a new episode of neck pain were included. Outcome variables included recovery-time and participant-perceived effect of treatment (GPE) at 3-months. There was a significant reduction of ≥ 1.4 points (95%CI 1.2-1.5) in pre- and post-treatment pain scores at each occasion of treatment. There was also small but significant increases in pain of ≤ 0.7 points (95%CI 0.4-1.0) between each treatment session, without regression to the preceding pre-treatment level. The relationships between immediate post-treatment effects and longer-term outcomes were explored using multivariate regression analyses. There was significant univariate association between recovery time and cumulative post-treatment changes in pain from the second, third and fourth (Exp(B) = 1.2) treatment sessions, as well as the presence of post-treatment headache (Exp(B) = 0.7) and other minor adverse symptoms (Exp(B) = 0.6). There was significant univariate association between GPE at 3-months and cumulative pain responses from first (B = 0.2), second (B = 0.3), third (B = 0.3) and fourth (B = 0.4) treatment sessions. The change in pain after session 1 was independently associated with GPE (B = 0.2). There was a consistently significant difference of ≥ 0.7 points (95%CI 0.43-0.89) in the different methods of reporting pain.

Our results showed that manual therapy for neck pain involves a "two-steps forward, one-step back" recovery pattern. Whilst minor adverse events are undesirable, they do not seem to be significantly associated with long-term recovery.

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KEYWORDS: *Manipulation spinal; Manual therapy; Neck pain; Pain measurement*

PMID: 24957712

EXERCISE

Movement and body awareness

Physiother Res Int. 2014 Dec 2. doi: 10.1002/pri.1618.

Analyzing Movements Development and Evaluation of the Body Awareness Scale Movement Quality (BAS MQ).

Sundén A¹, Ekdahl C, Horstman V, Gyllensten AL.

Abstract

BACKGROUND AND PURPOSE:

Limitations in everyday movements, physical activities are/or pain are the main reasons for seeking help from a physiotherapist. The purpose of this study was to investigate the psychometric properties of the Body Awareness Scale Movement Quality (BAS MQ) focusing on factor structure, validity and reliability and to explore whether BAS MQ could discriminate between healthy individuals and patients. BAS MQ assesses both limitations and resources concerning functional ability and quality of movements.

METHODS:

The total sample in the study (n = 172) consisted of individuals with hip osteoarthritis (OA) (n = 132), individuals with psychiatric disorders (n = 33) and healthy individuals (n = 7). A factor analysis of the BAS MQ was performed for the total group. Inter-rater reliability was tested in a group of individuals with hip OA (n = 24). Concurrent validity was tested in a group of individuals with hip OA (n = 89). The Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), the 6-Minute Walk Test (6MWT) and the Hip Osteoarthritis Outcome Score (HOOS) were chosen in the validation process.

RESULTS:

The factor analysis revealed three factors that together explained 60.8% of the total variance of BAS MQ. The inter-rater reliability was considered good or very good with a kappa value of 0.61. Significant correlations between BAS MQ and SF-36, HOOS and 6MWT in the subjects with hip OA confirmed the validity. The BAS MQ was able to discriminate between healthy individuals and individuals with physical and psychiatric limitations.

CONCLUSION:

Results of the study revealed that BAS MQ has a satisfactory factor structure. The inter-rater reliability and validity were acceptable in a group of individuals with hip OA. BAS MQ could be a useful assessment tool for physiotherapists when evaluating the quality of everyday movements in different patient groups. Copyright © 2014 John Wiley & Sons, Ltd.

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KEYWORDS: arthritis; mental health; musculoskeletal; outcome measurement; physiotherapy

PMID: 25452007

TRAINING and exercise and LBP**Daily exercises and education for preventing low back pain in children: a cluster randomized controlled trial**Physical Therapy, 12/15/2014 **Clinical Article**

Hill JJ, et a

Abstract

Background Children report low back pain (LBP) as young as 8 years. Preventing LBP in children may prevent or delay adult incidence.

Objectives To determine whether education and daily exercise affect LBP episodes in children compared to education alone.

Design Prospective, multicentre cluster randomized controlled trial.

Setting Seven New Zealand primary schools.

Participants Children (n=708), 8 to 11 years. Seven schools, stratified by sample size (36, 114, 151, 168, 113, 45, 83) were randomised and allocated to two masked groups; intervention (4 schools, n=469) or control (3 schools, n=239).

Interventions Intervention participants were taught four spinal movements for daily practice. Both groups participated in education that emphasized 'back awareness'.

Measurements LBP history at baseline was assessed. Children reported episodes of LBP during the previous week on trial Days 7, 21, 49, 105, 161 and 270. Analysis was at the individual participant level, with adjustment for school clusters.

Results There were no significant differences between groups in the odds of reporting no LBP in the previous week during the study period (OR0.72, 95%CI=0.46-1.14, p=0.16). Intervention participants reported significantly fewer episodes of LBP (OR0.54, 95%CI=0.39-0.74, p<.001) and significantly fewer lifetime first episodes of LBP (34%, n=86) than controls (47%, n=58) (OR0.60, 95%CI=0.39-0.91, p=0.02). The odds of an episode of LBP were greater in participants with a history of LBP (OR 4.21, 95%CI=3.07-5.78 p<0.001). LBP episodes decreased across the trial period for both groups (OR0.89, 95%CI=0.84-0.95, p<0.001). Adherence to exercise was poor.

Limitations Replication in other settings is required.

Conclusions Regular exercise and education appear to reduce LBP episodes in children 8-11 years compared to education alone.

CORE**TA contraction and LBP**

Man Ther. 2014 Dec;19(6):534-40. doi: 10.1016/j.math.2014.05.010. Epub 2014 Jun 20.

Individuals with chronic low back pain do not modulate the level of transversus abdominis muscle contraction across different postures.

Miura T¹, Yamanaka M², Ukishiro K³, Tohyama H⁴, Saito H⁴, Samukawa M⁴, Kobayashi T⁵, Ino T⁶, Takeda N⁷.

Abstract

The aim of this study was to evaluate the thickness of the transversus abdominis (TrA) muscle in three basic postures in subjects with and without chronic low back pain. Subjects were classified into a chronic low back pain group (n = 27) and a healthy control group (n = 23). The thickness of the TrA muscle was measured at rest and during the abdominal drawing-in manoeuvre (ADIM) in supine, sitting and standing postures using B-mode ultrasound imaging. Contraction ratio (TrA thickness during the ADIM/TrA thickness at rest) was calculated for each posture. At rest, the TrA thickness in the sitting and standing postures was significantly greater than in the supine posture ($p < 0.017$) in the control group, but similar in all three postures in the low back pain group. TrA thickness was similar in the low back pain and control group in all three postures. During the ADIM, TrA thickness was significantly greater in the control group than in the chronic low back pain group in all three postures. The contraction ratio was also significantly higher in the control group than in the chronic low back pain group in all three postures.

These results indicate that the automatic postural contraction of the TrA observed in the control subjects in the sitting and standing postures was not demonstrated in subjects with chronic low back pain. The present study revealed the one aspect of different response of the TrA muscle to changing posture between two groups.

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KEYWORDS *Automatic contraction; Chronic low back pain; Posture; Transversus abdominis muscle*

PMID: 25009124

Core for LBP

Efficacy of core muscle strengthening exercise in chronic low back pain patients

Journal of Back and Musculoskeletal Rehabilitation, 12/17/2014 Clinical Article

Kumar T, et al.

This study evaluated the effect of core muscle strengthening intervention on chronicity of chronic low back pain. This study concludes that core muscle strengthening exercise along with lumbar flexibility and gluteus maximus strengthening is an effective rehabilitation technique for all chronic low back pain patients irrespective of different duration (less than one year and more than one year) of their pain.

Methods

- Thirty patients were recruited from the outpatient department of the National Institute for the Orthopedically Handicapped.
- These 30 patients were divided into two groups: A and B on the basis of duration of low back pain.
- Group–A patients complain about pain duration for more than twelve months and Group B complains about pain duration from three to twelve months.
- Both the groups were received same intervention for six weeks.
- Assessment was done pre intervention and post intervention after six weeks for both the groups.
- For both the groups the assessment was done after six weeks for pre and post intervention.

Results

- The result described both the groups showed improvement in all the outcome measures including pain as well as in function using Numerical pain rating scale, Oswestry Disability Index, Sorensen test, Gluteus Maximus Strength, Activation of transversus abdominis and Modified–Modified Schober's Test.
- The improvement was statistically non–significant with inter groups and significant within group

RUNNING**Running spinal mechanics**

Spine (Phila Pa 1976). 2014 Dec 15;39(26):E1560-5. doi: 10.1097/BRS.0000000000000646.

Three-dimensional lumbar spine vertebral motion during running using indwelling bone pins.

MacWilliams BA¹, Rozumalski A, Swanson AN, Wervey R, Dykes DC, Novacheck TF, Schwartz MH.

Abstract***STUDY DESIGN:***

Eight healthy volunteers participated in this observational study.

OBJECTIVE:

Quantify 3-dimensional motions of the lumbar vertebrae during running via direct in vivo measurement and compare these motions to walking data from the same technique and running data from a skin-mounted technique.

SUMMARY OF BACKGROUND DATA:

Lumbar spine motions in running are only reported in 1 series of articles using a skin-mounted technique subject to overestimation and only instrumented a single vertebra.

METHODS:

Reflective marker triads were attached to Kirschner wires inserted into the spinous processes of L1-S1. Anatomic registration between each vertebra and attached triad was achieved using spinal computed tomographic scans. Skin-mounted trunk markers were used to assess thoracic motions. Subjects ran several times in a calibrated volume at self-selected speed while 3-dimensional motion data were collected.

RESULTS:

Lumbar spine flexion and pelvic rotation patterns in running were reversed compared with walking. Increased lumbar spine motions during running occurred at the most inferior segments. Thoracic spine, lumbar spine and pelvis exhibited significantly greater range of sagittal plane motion with running. The pelvis had significantly greater range of frontal plane motion, and the thoracic spine had significantly greater range of transverse plane motion with running. Skin-mounted studies reported as much as 4 times the motion range determined by the indwelling bone pin techniques, indicating that the skin motion relative to the underlying bone during running was greater than the motion of the underlying vertebrae.

CONCLUSION:

The lumbar spine acts as a distinct functional segment in the spine during running, chiefly contributing lateral flexion to balance the relative motions between the trunk and pelvis. The lumbar spine is also shown to oppose thoracic spine sagittal flexion. While the lumbar spine chiefly contributes to frontal plane motion, the thoracic spine contributes the majority of the transverse plane motion.

LEVEL OF EVIDENCE: N/A.

PMID: 25341976

PAIN

Antidepressants and suicide

Pain. 2014 Dec;155(12):2471-2475. doi: 10.1016/j.pain.2014.08.022. Epub 2014 Aug 27.

Suicidal ideation and behavior associated with antidepressant medications: Implications for the treatment of chronic pain.

Pereira A¹, Conwell Y², Gitlin MJ³, Dworkin RH⁴.

ABSTRACT

Antidepressant medications have a prominent role in the treatment of chronic pain. For patients with neuropathic pain, tricyclic antidepressants (TCAs) and serotonin and norepinephrine reuptake inhibitors (SNRIs) have been recommended as first-line treatments; selective serotonin reuptake inhibitors (SSRIs) and bupropion are generally considered third-line treatments because of inconsistent or unreplicated clinical trial results. For treatment of fibromyalgia, it has been recommended that various antidepressants reduce pain and often improve function and should therefore be considered. Randomized clinical trials (RCTs) of duloxetine, an SNRI, have shown efficacy in chronic low back pain and osteoarthritis, and have provided the basis for its approval by the US Food and Drug Administration (FDA) to treat chronic musculoskeletal pain.

The use of antidepressants for analgesic effects when treating chronic pain—and for antidepressant effects in patients with co-morbid depression—makes it important to consider the evidence regarding associations between these medications and suicidal ideation and behavior (SIB). After conducting a meta-analysis, the FDA issued a black box warning in 2004 regarding an increased risk of suicidal ideation and behavior in children and adolescents treated with all antidepressants. The European Medicines Agency reviewed SSRIs and SNRIs and issued similar warnings in 2005. To determine whether these warnings should be extended to adults, the FDA conducted another meta-analysis, which led to an expanded warning that included young adults 18 to 24 years old.

In considering associations between antidepressant use and SIB, it is important to recognize that individuals with chronic pain are at increased risk for SIB. For example, the odds of attempted suicide are approximately 2 times higher in the presence of chronic pain, and the prevalence of suicidal ideation appears to range from approximately 20% to 25% to as high as 48% in fibromyalgia patients. In addition, depression—a well-established risk factor for SIB—is a very common co-morbidity in individuals with chronic pain that undoubtedly contributes to their increased risk of SIB.

The objective of this article is to review recent research examining associations between antidepressants and SIB in individuals 18 years and older. Associations between antidepressants and SIB in children and adolescents are beyond the scope of this article, as is antidepressant use for migraine prophylaxis. We reviewed associations between SIB and antiepileptic drugs (AEDs) and their implications for the treatment of neuropathic pain and fibromyalgia in a previous article.

Impact of chronic pain

Eur J Health Econ. 2014 Nov 22.

The economic impact of chronic pain: a nationwide population-based cost-of-illness study in Portugal.

Azevedo LF¹, Costa-Pereira A, Mendonça L, Dias CC, Castro-Lopes JM.

Abstract

In addition to its high frequency and relevant individual and social impact, chronic pain (CP) has been shown to be a major contributor to increased healthcare utilisation, reduced labour productivity, and consequently large direct and indirect costs. In the context of a larger nationwide study, we aimed to assess the total annual direct and indirect costs associated with CP in Portugal. A population-based study was conducted in a representative sample of the Portuguese adult population. The 5,094 participants were selected using random digit dialling and contacted by computer-assisted telephone interviews. Questionnaires included the brief pain inventory and pain disability index. Estimates were adequately weighted for the population. From all CP subjects identified, a subsample (n = 562) accepted to participate in this economic study. Mean total annualised costs per CP subject of <euro>1,883.30 were observed, amounting to <euro>4,611.69 million nationally, with 42.7 % direct and 57.3 % indirect costs, and corresponding to 2.71 % of the Portuguese annual GDP in 2010. Only socio-demographic variables were significantly and independently associated with CP costs, and not CP severity, raising the possibility of existing inequalities in the distribution of healthcare in Portugal.

The high economic impact of CP in Portugal was comprehensively demonstrated. Given the high indirect costs observed, restricting healthcare services is not a rational response to these high societal costs; instead improving the quality of CP prevention and management is recommended.

PMID: 25416319

PHARMACOLOGY

Opioids and cannabis

Experience of adjunctive cannabis use for chronic non-cancer pain: Findings from the Pain and Opioids IN Treatment (POINT) study

Drug and Alcohol Dependence, 12/16/2014 Clinical Article

Degenhardt L, et al.

Abstract

Background

There is increasing debate about cannabis use for medical purposes, including for symptomatic treatment of chronic pain. We investigated patterns and correlates of cannabis use in a large community sample of people who had been prescribed opioids for chronic non-cancer pain.

Methods

The POINT study included 1,514 people in Australia who had been prescribed pharmaceutical opioids for chronic non-cancer pain. Data on cannabis use, ICD-10 cannabis use disorder and cannabis use for pain were collected. We explored associations between demographic, pain and other patient characteristics and cannabis use for pain

Results

One in six (16%) had used cannabis for pain relief; 6% in the previous month. A quarter reported that they would use it for pain relief if they had access. Those using cannabis for pain on average were younger, reported greater pain severity, greater interference from and poorer coping with pain, and more days out of role in the past year. They had been prescribed opioids for longer, were on higher opioid doses, and were more likely to be non-adherent with their opioid use. Those using cannabis for pain had higher pain interference after controlling for reported pain severity. Almost half (43%) of the sample had ever used cannabis for recreational purposes, and 12% of the entire cohort met criteria for an ICD-10 cannabis use disorder

Conclusions

Cannabis use for pain relief purposes appears common among people living with chronic non-cancer pain, and users report greater pain relief in combination with opioids than when opioids are used alone.