The fifth official issue of Physio Network containing twelve author research reviews.
AUTHORS

We are very pleased to have twelve authors in this issue of Physio Network:

Tom Goom, Christina Le, Robin Kerr, Dr Sarah Haag, Dr Teddy Willsey, Simon Kirkegaard, Dr Carlo Wood, Dr Sandy Hilton, Mariana Wingood, Todd Hargrove, Dr Bart Dingenen, Ben Cormack

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Author: Christina Le

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Author: Dr Sarah Haag
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Author: Ben Cormack

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+ PERSONAL BIO

Dr. Teddy Willsey is a sports medicine focused physical therapist and private practice owner in Rockville, Maryland. Teddy has an interest in working with high level athletes and return to sport rehab. In addition to practicing PT, Teddy speaks and teaches publicly, writes and blogs regularly, and posts on social media daily. He can be found on Instagram at @strengthcoachtherapy or online at www.teddywillsey.com.

Tom Goom is a physio who specialises in running injury and loves to run! He’s the creator of Running-physio.com a published researcher and international speaker, presenting his popular Running Repairs Course all over the world!

Dr Sandy Hilton graduated from Pacific University (Oregon) in 1988 with a Master of Science in Physical Therapy and a Doctor of Physical Therapy degree from Des Moines University in December 2013. She has worked in multiple settings across the US with a neurologic and orthopedic emphasis including a focus in pelvic rehabilitation for pain and dysfunction. Sandy is the co-host of Pain Science and Sensibility, a podcast on the application of research into the clinic.

Christina Le is a physiotherapist (Glen Sather Sports Medicine Clinic) and PhD student (University of Alberta) from Edmonton, Canada. As a clinician, she primarily worked with athletes with anterior cruciate ligament (ACL) injuries. This experience has motivated her to pursue research investigating quality of life in those with ACL injuries. Find her on Twitter as @yegphysio or online at www.yegphysiotherapy.com.
Mariana Wingood is a full time clinician and part-time educator. She is an active member of the Vermont Falls Coalition, Gerontology Society of America, and Academy of Geriatrics. Mariana’s focus is on fall prevention and exercise prescription for older adults. She has presented at a state, national conferences, and international level.

Ben Cormack owns and runs Cor-Kinetic. He is a musculoskeletal therapist with a clinical background in sports therapy, rehabilitation, pain science & exercise stretching back 15 years. He specialises in a movement & exercise based approach with a strong education component and patient centred focus. Ben is a popular international presenter who has delivered conferences presentations and courses all over the world.

Simon is the founder and CEO of Smertevidenskab (pain science) which is a company that focuses on teaching contemporary pain science to healthcare professionals and treating people with chronic pain. He’s currently undertaking a Masters by Research degree under Professor Lorimer Moseley. Simon is part of the Body in Mind research group and is on the board of executive officers in The Critical Physiotherapy Network.

Mariana Wingood is a full time clinician and part-time educator. She is an active member of the Vermont Falls Coalition, Gerontology Society of America, and Academy of Geriatrics. Mariana’s focus is on fall prevention and exercise prescription for older adults. She has presented at a state, national conferences, and international level.

Carlo Wood MPT, PhD, APA Sports & MSK Physio, OCS, DNSET is an instructor for Neurodynamic Solutions and owner of a cash only clinic specializing in sports injuries (sportsandorthophysio.net). He is a manuscript reviewer for JOSPT, invited speaker to Orthopaedic conferences worldwide and also part of the US Olympic Committee’s Sports Medicine Volunteer program.

Robin Kerr is an Australian trained physiotherapist with 33 years of clinical experience. Her special interests lay in pelvic floor and lumbo-pelvic dysfunction. She is heavily trained in biomechanics and gait lab running analysis, however over the last 20 years has moved towards a focus on motion and the biopsychosocial model in the management of persistent pain. You can find more about Robin and her team here www.alchemyinmotion.com.au

Sarah Haag is a physiotherapist and co-owner of Entropy Physiotherapy and Wellness in Chicago. At Entropy, Sarah specializes treating the spine and pelvis with a specialization in women’s and men’s health. She received her Doctorate of Physical Therapy and Masters of Science in Women’s Health from Rosalind Franklin University in 2008. In 2009 she was awarded a Board Certification as a specialist in women’s health (WCS). While not a researcher, she enjoys hanging out with researchers to shorten the gap between research and clinical application.
PSYCHOLOGICAL INTERVENTIONS USED TO REDUCE SPORTS INJURIES: A SYSTEMATIC REVIEW OF REAL-WORLD EFFECTIVENESS

TOM GOOM

BACKGROUND & OBJECTIVES:

Psychosocial factors including stress, anxiety and negative life events have long been thought of as potential risk factors for developing a sports injury. A model of stress and injury was proposed in the 80’s and research since then has confirmed the connection between psychosocial factors and injury, demonstrating that they may also play a key role in rehab and return to sport. Psychological interventions designed to address these factors may help to reduce injury risk. This systematic review examines the real-world effectiveness of such interventions for preventing sports injuries.

METHODS (WHAT THEY DID):

A standardised search procedure identified 14 studies that met the following eligibility criteria; Randomised Controlled Trial (RCT)/ Non-RCT with comparison group or before and after study with qualitative methods; and specific psychological intervention used in relation to injury prevention. These studies included a total of 1380 athletes with an age range of 10 to 33 years who were involved in a variety of sports. There were 9 RCTs, 3 quantitative non-randomised trials and one quantitative descriptive study. A Mixed Methods Appraisal Tool was used to rigorously appraise the included studies and assess risk of bias.
RESULTS/WHAT THEY FOUND:

Stress management and relaxation were the most common interventions and included imagery, goal setting, mindfulness, self-talk and breathing techniques alongside a selection of other methods. 13 out of 14 studies reported positive effects from the interventions with fewer injuries and/or reduced time lost due to injury. The duration and frequency of the approaches varied but there was evidence from studies at low risk of bias that up to 2 sessions per week for 3 to 6 weeks of interventions based on stress inoculation training was effective for reducing sports injuries. The authors concluded: “Psychological interventions, particularly those with a stress reduction focus such as stress inoculation training, are efficient and efficacious methods of reducing sports injury rates and injury time loss... Practitioners may wish to consider psychosocial interventions as part of their interdisciplinary injury prevention programmes”.

LIMITATIONS (THINGS TO KEEP IN MIND):

As with any systematic review its usefulness is limited by the quality of the studies being reviewed. There are a number of limitations of those studies to consider. A broad range of definitions of ‘sports injury’ was used across the studies including varying time loss definitions from 1 to 4 days. There was lack of clarity over blinding and moderate risk of bias was reported. Most studies had a small sample size and lacked a sample size estimation which questions their statistical power. In addition, female participants were under-represented which may limit application to female athletes.
CLINICAL IMPLICATIONS (HOW THIS IMPACTS CLINICAL PRACTICE):

This review sits within a growing body of evidence that shows that psychosocial factors are important in both injury development and management. In particular it appears that managing stress may be key. Previous research has found stress to be a risk factor for injury and to influence recovery and healing. A simple clinical ‘take home’ would be to routinely ask patients about their mental wellbeing and stress levels. Taking positive steps to reduce stress may help a patient with managing a current injury and reduce risk of future injury.

For clinicians working with athletes this study supports the inclusion of interventions to improve mental wellbeing as part of a comprehensive approach to injury prevention. This could be combined with load management, education on lifestyle and recovery and appropriate strength and conditioning to achieve the best results. The authors also suggest that we create a strong alliance with athletes based on strong bonds and make shared decisions about the goals of the therapy and which approaches to use. These ‘alliance’ factors are thought to increase the effectiveness of a psychological intervention but are also likely to improve overall outcomes of our treatments.

“Taking positive steps to reduce stress may help a patient with managing a current injury and reduce risk of future injury.”

+ STUDY REFERENCE

DELAYING ACL RECONSTRUCTION AND TREATING WITH EXERCISE THERAPY ALONE MAY ALTER PROGNOSTIC FACTORS FOR 5-YEAR OUTCOME: AN EXPLORATORY ANALYSIS OF THE KANON TRIAL

C H R I S T I N A L E

BACKGROUND & OBJECTIVE:

Evidence-based recommendations to guide clinicians and patients toward operative or non-operative management of acute anterior cruciate ligament (ACL) ruptures have yet to be established. With various studies reporting poor long-term outcomes following ACL reconstruction, determining the optimal treatment pathway for individuals with an ACL rupture can help minimize negative health consequences.

The objectives of this exploratory analysis were to (1) identify prognostic factors for five-year self-reported outcomes in ACL injured individuals and (2) compare prognostic factors between three treatment groups (early reconstruction plus exercise therapy, exercise therapy plus delayed reconstruction, and exercise therapy alone).

METHODS (WHAT THEY DID):

This study was a secondary, exploratory analysis of the five-year outcomes of the Knee Anterior Cruciate Ligament, Nonsurgical versus Surgical Treatment (KANON) Study. The initial KANON study was a randomized controlled trial that included active adults aged 18-35 years who had an acute ACL rupture. Individuals were enrolled if they had an acute injury (within four weeks), had a complete rupture confirmed by clinical examination, and reported between 5-9 on the Tegner Activity Scale (TAS).

Participants were randomized into two groups in the initial KANON trial: early ACL reconstruction plus exercise therapy or exercise therapy with delayed ACL reconstruction if needed. The delayed reconstruction group was further subdivided into those who inevitably underwent surgery and those who pursued exercise therapy alone.

Prognostic factors included injury-related factors at baseline (e.g. cartilage or meniscus damage), treatment-related factors (e.g. subsequent ACL rupture or non-ACL surgeries), and patient-reported factors at baseline (e.g. Short Form-36 (SF-36) and Knee Injury and Osteoarthritis Outcome Score (KOOS)). The five-year outcome was the KOOS – specifically, the pain, symptoms, sport and recreation function, and QOL subscales. The associations between each prognostic factor and KOOS subscale score were assessed.
RESULTS/WHAT THEY FOUND:

118 participants with a mean age of 26 years were included at the five-year mark. Participant breakdown by treatment group included 59 in the early ACLR group, 30 in the delayed ACLR group, and 29 in the exercise therapy alone group. Nine of the 118 participants suffered a second ACL injury (i.e. graft rupture or contralateral ACL rupture) and 38 underwent at least one non-ACL surgery (e.g. partial meniscectomy).

Upon examining all participants together, sustaining a second ACL injury, undergoing at least one non-ACL surgery, and lower baseline SF-36 mental composite score were all associated with worse self-reported outcomes at five-years. When comparing the different treatment arms, the exercise therapy alone group had better long-term knee symptoms than the early ACLR group.

LIMITATIONS/THINGS TO KEEP IN MIND:

As an exploratory analysis, this study was not meant to test hypotheses. Rather, its intention was to generate future hypotheses. In total, 168 regressions were run to determine the association between each prognostic factor and KOOS subscale scores. With a large amount of comparisons, the chances of incurring a type 1 error (i.e. false positive) are rather high. This limitation was discussed by the authors.
CLINICAL IMPLICATIONS/HOW THIS IMPACTS CLINICAL PRACTICE:

This study suggests that sustaining a second ACL tear and undergoing non-ACL surgery following an initial ACL rupture leads to worse self-reported five-year outcomes of pain, symptoms, sport and recreation function, and QOL. These poor prognostic factors highlight the need for appropriate rehabilitation after an ACL tear to mitigate the risk of secondary knee trauma. There has been a strong shift toward using criterion-based protocols to ensure both subjective and objective readiness to return to sport. Utilizing a battery of return to sport tests and avoiding early return (i.e. within 6-8 months of injury or surgery) may also curtail the chance of a re-injury.

The final take home message for both clinicians and patients is to begin exercise therapy prior to deciding on ACL reconstruction. The original KANON trial demonstrated that individuals can have successful recovery from an ACL rupture with or without surgery. Engaging in active rehabilitation allows patients to manage their acute pain and symptoms while they weigh up the pros and cons of undergoing surgery. The findings of this study propose that managing ACL ruptures with exercise therapy compared to having immediate surgery may benefit long-term health.

“The exercise therapy alone group had better long-term knee symptoms than the early ACLR group”

+ STUDY REFERENCE

Delaying ACL reconstruction and treating with exercise therapy alone may alter prognostic factors for 5-year outcome: an exploratory analysis of the KANON trial (2017) British Journal of Sports Medicine, 51(22), 1622-1629.
ARTICLE BY CHRISTINA LE

QUIZ

Name two prognostic factors in this study that were linked to worse self-reported 5-year outcomes?

Click here to link to quiz answer
WHAT MATTERS MOST TO PEOPLE IN MUSCULOSKELETAL PHYSIOTHERAPY CONSULTATIONS? A QUALITATIVE STUDY

ROBIN KERR

BACKGROUND & OBJECTIVE:

Traditional musculoskeletal physiotherapy predominantly utilizes a biomedical paradigm in which a power asymmetry between the clinician and person seeking therapy exists. The biopsychosocial paradigm encourages a person-centered approach, the aim being a partnership in which power, responsibility and control over decision-making are equally shared. The objective of this qualitative study was to understand people’s ability to express their “issues of most importance” to their clinician during an initial consultation and subsequently the clinician’s ability to understand and address these issues.

METHODS (WHAT THEY DID):

- NHS-based qualitative study
- 15 clinicians were recruited then 15 persons requiring musculoskeletal physiotherapy were allocated to them.
- Pre and post-consultation interviews were performed plus the consultation was recorded. All 3 interactions were transcribed.
- A hermeneutic approach, i.e. manual in-depth interpretation of the texts, by one author experienced in interpretive phenomenology, was employed. In this approach themes arising in the data could be identified.
RESULTS (WHAT THEY FOUND):

Most people presented with 2 to 5 topics they wished to discuss. Three themes emerged from the data.

**Theme 1: Clear Versus Unstructured Agendas**

A dichotomy appeared between people, some appearing well informed and able to clearly define their issues. Others appeared to struggle to formulate questions and identify issues of importance for themselves.

**Theme 2: People Need Information & Understanding**

A lack of understanding reduced some people’s ability to formulate thoughts and identify issues. A number of people voiced disappointment in the lack of information given by previously seen health professionals. They experienced satisfaction when provided with knowledge.

**Theme 3: Developing A Sense Of Collaboration**

A sense of collaboration developed when people felt engaged and supported to manage all impacts of their condition. Open-ended questions fostered engagement, the person becoming an active partner with an established focus.

“Patients need to be able to declare, discuss and have addressed “issues of most importance” to them”
LIMITATIONS (THINGS TO KEEP IN MIND):

- Self-selection bias may have occurred with the clinicians.
- The small sample size may not be representative of the general population with musculoskeletal issues.
- 60% of the study population was 55-74 years old, this being older than the general population. Previous research has indicated that during consultations older people do not ask as many questions, take less time and tend to be more passive.

CLINICAL IMPLICATIONS (HOW THIS IMPACTS CLINICAL PRACTICE):

Desirable outcomes in musculoskeletal therapy are proportional to the level at which people participate in their own care. Imperative for this is effective communication and a person-centered approach. In a consultation, patients need to be able to declare, discuss and have addressed “issues of most importance” to them. The most important task for the clinician is to identify these issues, shifting away from clinician dominant and symptom-focused therapy.

1. Clear Versus Unstructured Agendas

The ability to identify their main issues depends on what the person knows about the musculoskeletal problem. Low levels of activation, disengagement and seeming passivity in an initial consultation may simply reflect a lack of understanding. The clinician’s role is to fill the knowledge gap so that the person can identify their main issues and be empowered with enhanced self-awareness and a sense of their self-management role. Possible useful questions:

- “What do you think has happened or is going on?”
- “How do you think your life has been impacted by your experience of pain/disability?”
- After knowledge of condition imparted – “So if we take that into consideration what are your thoughts and any possible concerns?”
- “Is there something else you would like to address in the visit today?”
2. People Need Information and Understanding

Information and understanding can be more important for some people than the conventional intervention. A question could be “What are you hoping to get from today’s consultation?”

Common needs arising in this study were:

- Explanation of the diagnosis
- Improved understanding of the problem
- Reassurance that there is no sinister pathology underlying the problem
- Probability of recurrence and progression of the condition
- What exercises and activities would be most appropriate
- Foreseeable future impact of the condition
- Evidence-based information on treatment options/outcomes

3. Developing A Sense Of Collaboration

The attitudes, communication skills and behavior of the clinician can determine the person’s engagement and sense of being supported in a partnership. If the “issues of most importance” have been identified, the clinician can engage from the person’s perspective and in doing so build trust. Possible questions and strategies could be:

- “What are you hoping to gain from the session today?”
- “Is there anything you would like to discuss before we start?”
- “What are your thoughts in terms of …..?”
- Paraphrasing by the clinician to confirm their understanding of what was said.
- Summary of the main issues of importance by the clinician and confirmation by the person.

+ STUDY REFERENCE

EVALUATING PSYCHOSOCIAL CONTRIBUTIONS TO CHRONIC PAIN OUTCOMES

DR SARAH HAAG

BACKGROUND & OBJECTIVE:

Chronic pain continues to be one of the most challenging ‘diagnoses’ or issues seen in the clinic. This article reviews two categories of studies that evaluate the contributions of psychosocial factors into the experience of chronic pain: general psychosocial variables such as distress, trauma and interpersonal factors are discussed, and pain-specific psychosocial variables including catastrophizing, expectations and pain-related coping, are examined.

METHODS (WHAT THEY DID):

No methods were listed. 403 references were cited throughout the course of the article, indicating the review was extensive.
RESULTS/WATCH THEY FOUND:

“The biopsychosocial approach describes pain and disability as a multidimensional, dynamic interaction among physiological, psychological and social factors that reciprocally influence one another, resulting in chronic and complex pain syndromes’ (Gatchel 2014, Jensen 2014). While many people who work in the clinic with people in pain can acknowledge the complexity of people who are in pain, there continues to be a struggle to find the most effective way to help people address their varying levels of pain and disability. This review discusses two broad categories of ‘mechanistic’ studies that evaluate the contributions of psychosocial factors to the experience of chronic pain. First, psychosocial processes that either exist within an individual as a pre-existing ‘vulnerability’ factor or emerge for the first time in response to the experience of ongoing pain are discussed. Then types of pain-related interventions that are hypothesized to directly affect a psychological factor, presuming that changing that psychosocial factor will be associated with a subsequent change in one or more pain-related outcomes are discussed.

“Psychological and social factors are not just reactions to persistent pain, but part of the complexity of the person presenting in front of you.”

LIMITATIONS/THINGS TO KEEP IN MIND:

No methods were listed, however the reference list is extensive, with 403 articles cited. However, the search methodology for articles was not included, so it is not possible from the article alone to conclude that all pertinent articles were included or why any articles were excluded.

CLINICAL IMPLICATIONS/HOW THIS IMPACTS CLINICAL PRACTICE:

Understanding the factors impacting the experience of chronic pain can guide the most effective interventions to help address the complexity of chronic pain. This article looks first at the psychosocial factors that may impact the development or experience of chronic pain. Depression, anxiety, and emotional distress are probably the most commonly assessed psychological factors in patients with persistent pain. While psychological symptomatology is often interpreted as a consequence of chronic pain, prospective studies indicate that pre-morbid psychological dysfunction represents a risk factor for future development of chronic pain. Just as negative affect is associated with increased pain and disability, positive affect and optimism are associated with less pain and dysfunction. One study mentioned suggests that Positive Activity Interventions may be an effective intervention for chronic pain. Positive Activity Interventions are aimed at raising positive feelings, cognitions and behaviors rather than reducing negative feelings.
Early life trauma – physical, sexual and psychological – have all been demonstrated as risk factors for many chronic pain conditions in adulthood. While social support is found to be associated with improved physical functioning for individuals with pain conditions, ‘solicitous’ responses to pain (encouragement to take it easy or to ‘be taken care of’) were found to be less helpful in the treatment of chronic pain.

Other factors to consider as contributors to the development of chronic pain are race and gender. It is important to acknowledge the societal roles and expectations of gender. In spite of anxiety being more prevalent among females, some studies have show that anxiety is positively correlated with pain sensitivity among males, but not females. Hormonal influences should also be considered, as with pain emerging during puberty, as well as pain syndromes that vary across the menstrual cycle. Racial differences in clinical and experimental pain sensitivity may be due to biological factors, as well as psychosocial factors and appraisals, expectations and coping mechanisms.

The pain-specific psychosocial variables discussed are coping, catastrophizing, expectations and self-efficacy. Active coping strategies have been associated with less depression and better psychological adjustment while passive strategies (like hoping and praying) were related with higher levels of disability and increased pain sensitivity.

Catastrophizing is a cognitive and emotional response to pain consisting of magnification, rumination and helplessness. Some studies indicate that catastrophizing is the most important pre-treatment risk factor that impairs the effectiveness of pain-relieving interventions. Acceptance and Commitment Therapy has been shown to reduce catastrophizing.

Expectations of pain and self-efficacy are also key in addressing chronic pain. Self-efficacy is defined as an individual’s belief in the ability to perform a behavior or achieve a desired outcome. Cognitive Behavioral Therapy and Mindfulness-based Stress Reduction have both been helpful in improving self-efficacy.

Overall, is important to remember that the psychological and social factors are not just reactions to persistent pain, but part of the complexity of the person presenting in front of you.

+ STUDY REFERENCE

WHAT HAPPENS TO PATIENTS WHEN WE DO NOT REPAIR THEIR CUFF TEARS? FIVE-YEAR ROTATOR CUFF QUALITY-OF-LIFE INDEX OUTCOMES FOLLOWING NON-OPERATIVE TREATMENT OF PATIENTS WITH FULL-THICKNESS Rotator Cuff TEARS.

DR TEDDY WILLSEY

BACKGROUND & OBJECTIVE:

The variability in rotator cuff tear symptoms and treatment is extensive and thus poses a conundrum for clinicians, surgeons and researchers. There is favorable research supporting both surgical and non-operative approaches to long-term management. Previous models have looked at 2-year follow ups, but not 5 years. The aim of this study was to answer the question of whether non-operative management of chronic full-thickness rotator cuff tears is a lasting solution, by examining 5-year outcomes in patients enrolled in a non-operative rotator cuff tear treatment program.

METHODS (WHAT THEY DID):

Patients voluntarily enrolled in this prospective study. Inclusion criteria included chronic symptoms (>3 months), full thickness supraspinatus or infraspinatus tears (confirmed by ultrasound or MRI), age 40-85 years. Patients qualified for the study following a successful 3-month rehabilitation, defined by both the patient and surgeon mutually agreeing continuation of non-operative treatment was the best course of treatment.

A few points of consideration regarding patient demographic and epidemiology:

- 72% of patients had the full thickness RC tear on their dominant arm
- 63% had significantly decreased external rotation strength at the onset of their rehabilitation
- Average patient age at onset was 60 y/o
- Ratio of traumatic to insidious onset was nearly 50/50
RESULTS/WHAT THEY FOUND:
The study started with 104 patients whom met the inclusion criteria. Attrition rates were normal for a 5-year longitudinal study, with 9 lost due to non-follow-up at 2 years and 14 more lost at 5 years. Of the remaining 79 patients at 5 years, 25 had sought surgery while 54 remained satisfied with non-operative treatment. The patients in the non-operative group had a mean RC-QOL (Rotator Cuff-Quality Of Life) score of 83 while the surgical repair group had a score of 89.

LIMITATIONS/THINGS TO KEEP IN MIND:
As with many research ventures, this particular study had significant limitations. Patients under 40 and “elite athletes” were excluded. Furthermore, the use of corticosteroids and anti-inflammatories was not an exclusion factor. It would have been preferable to see a completely conservative treatment group in order to isolate the variable of physical rehabilitation. Lastly, there was not a follow up objective exam at 5 years. The only variable assessed was a subjective questionnaire (RC-QOL). It would have been ideal to assess range of motion and strength.

While the response attrition rate was normal for longitudinal studies, this does not change the fact that losing 25% of participants is less than ideal. It would not be fair to make any assumptions regarding why 25% patients would not respond. Regardless, one can hope that in this age of rapid electronic communication, longitudinal studies should start to show improved attrition rates.
CLINICAL IMPLICATIONS/HOW THIS IMPACTS CLINICAL PRACTICE:

It has been previously purported that a full thickness rotator cuff tear would eventually require surgery. This study successfully challenges the assumption of inevitable surgery by showing the majority of non-operative patients remained satisfied with their results at 5 years.

Although 32% of patients whom sought surgery ended with a higher mean RC-QOL score, this study still provides strong contextual evidence that surgical intervention should not be the first course of treatment for a full thickness rotator cuff tear. Patients with chronic full thickness RC tears should begin with physical rehabilitation, as a majority have been shown to respond favorably. Unfortunately, this cannot be inferred for extremely active patients or those under 40 years old. This is a rather large group that was excluded from the study.

“Surgical intervention should not be the first course of treatment for a full thickness rotator cuff tear”

Of the qualified patients who followed up at both 2 and 5 years, 32% went on to have surgery despite initial successful non-operative treatment, while 68% were still satisfied with non-operative treatment. Although the RC-QOL score of the non-operative group was slightly lower than that of the surgical group (83 versus 89), a non-operative approach is still the best first course of treatment for chronic RC tears of the supraspinatus and infraspinatus.

+ STUDY REFERENCE

What percentage of people in this study were satisfied with non-operative treatment of their full-thickness rotator cuff tear at the 5-year mark?

A) 25%
B) 68%
C) 32%
D) 75%

Click here for quiz answer
RED FLAGS FOR LOW BACK PAIN ARE NOT ALWAYS REALLY RED: A PROSPECTIVE EVALUATION OF THE CLINICAL UTILITY OF COMMONLY USED SCREENING QUESTIONS FOR LOW BACK PAIN

SIMON KIRKEGAARD

BACKGROUND & OBJECTIVE:

Red flag questions have long been utilized in clinical practice as a way to identify potential serious underlying spinal pathology as a cause of low back pain, despite limited evidence. This study set out to examine the effectiveness of red flag questions as a screening tool for patients presenting with low back pain to a multidisciplinary academic spine center.

METHODS (WHAT THEY DID):

Questionnaires which included several red flag questions were completed during their first physician visit among patients who presented as a new patient with a chief complaint of low back pain with or without leg pain. A total of 9,940 patients were included into the study between 2005 and 2016 by a fellowship-trained physician. Diagnostic data (including imaging reports) for the same clinical episode were collected from medical records, and a retrospective review was conducted of the cases of ‘red flag diagnoses’ and the association with red flag screening questions. In this study, spinal fracture, malignancy, infection, and cauda equina syndrome were identified as ‘red flag diagnoses’.
RESULTS/WHAT THEY FOUND:
Red flags are commonly identified in the low back pain population with 92.6% of the patients possessing at least 1 red flag symptom. Red flag diagnosis was identified in 8.3% of the patients with fracture (5.6%) the most common followed by tumor (1.6%), infection (1.2%) and cauda equina (0.4%). While some individual red flags and combination of red flags were associated with an elevated probability of serious spinal pathology, the absence of red flag responses did not meaningfully decrease the likelihood of a red flag diagnosis. The most common red flag symptom was night pain (58.1%) yet the presence or absence of this symptom was unrelated to any particular diagnosis and also resulted in many false-positives. Interestingly, it was found that spinal malignancy had no associated red flags in 64% of the patients.

LIMITATIONS/THINGS TO KEEP IN MIND:
This study was conducted at a large multidisciplinary spine center with primary, secondary, and tertiary-care spinal patients. The center employs surgeons as well as physiatrists who can self-refer which introduces referral bias which explains the high rate of 8.3% of red flag diagnoses in the study population. This means the associations identified in this study are unlikely to be generalizable and likely to be even smaller in the average population. Also, this study did not employ all red flag questions of interest, such as prolonged corticosteroid use, which is traditionally associated with vertebral fracture, and other red flag questions may provide better identification of red flag diagnosis.
This study calls for caution utilizing red flag questions. No question had a sensitivity above 75% and most were well under 60%, which makes these questions a poor screening tool for serious underlying spinal pathology. However, some of these questions may still be of benefit in the clinical setting as specific questions and combinations of questions lead to almost 100% specificity which helps to identify a few patients who most likely have a red flag diagnosis. While the presence of serious underlying spinal pathology may be indicated by a red flag question, it is important to consider the high prevalence of positive red flags to minimize the risk of indiscriminate pursuit of further imaging. Unnecessary imaging increases costs, the likelihood of the patient choosing surgical intervention and exposes the patient to radiation. Studies have shown unnecessary imaging does not provide a better outcome for the patient and may also increase the risk of chronic low back pain. While no one wishes to miss an underlying serious spinal pathology, current red flag screening procedures do not provide adequate information to guide who should be offered imaging. Providing every patient with a scan is both unfeasible and potentially does more harm than good. Ultimately, better screening tools to identify underlying serious spinal pathology as a cause of low back pain are needed.

“This study calls for caution utilizing red flag questions’”

+ STUDY REFERENCE

ARTICLE BY SIMON KIRKEGAARD

QUIZ

What percentage of patients possessed at least 1 red flag symptom in this study vs what percentage actually had a red flag diagnosis?

Click here to link to quiz answer
SCIATIC NERVE STIFFNESS IS NOT CHANGED IMMEDIATELY AFTER A SLUMP NEURODYNAMICS TECHNIQUE

DR CARLO WOOD

BACKGROUND & OBJECTIVE:

To the authors’ knowledge, in vivo studies on the mechanical properties of nerves in humans have never been confirmed. Nerves have the ability to elongate when submitted to a load. Shear wave elastography can infer information regarding this elongation/stiffness reliably. However, it is unclear how neural stiffness changes by performing neurodynamic techniques. This study aimed to determine, in vivo, the immediate effects on stiffness of the sciatic nerve after applying tension in the slump position using shear wave elastography. The authors hypothesized this would induce an immediate decrease of the sciatic nerve stiffness of healthy subjects.

METHODS (WHAT THEY DID):

Fourteen participants without disorders of the lower limb or back were included. Pre and post tests were performed in prone using a dynamometer with maximal passive ankle dorsiflexion ROM determined. Then shear wave velocity of the sciatic nerve and the ankle torque-angle were assessed. Next, the slump test was performed to the experimental limb, while the control limb stayed relaxed. The knee was passively extended, and the ankle was maximally dorsiflexed, until the point of stretching discomfort. This position was statically maintained for 3 minutes. Immediately after the slump protocol, subjects were re-positioned in prone for post testing.
RESULTS/WHAT THEY FOUND:

During all the tests, only a 1.5% ± 1.1%, 2.0% ± 0.9%, and 2.8% ± 1.3% muscle activation was observed for the semitendinosus, medial gastrocnemius, and tibialis anterior muscles, respectively. In respect to the sciatic shear wave velocity, no effects were found for the limb (p=0.435) or condition (p=0.779) variables. The slump intervention did not change the sciatic shear wave velocity, nor the dorsiflexion passive torque throughout the ankle dorsiflexion motion. Excellent values of intra-rater repeatability, and low values of standard error of measurement, were observed for the shear wave velocity measurements.

VIDEO LINK:

click on the image above for video
LIMITATIONS/THINGS TO KEEP IN MIND:

The authors excluded 5 subjects due to unfilled shear wave elastogram windows due to greater thickness of the subcutaneous adipose and fascia. This acts as a barrier for the supersonic push to travel through the sciatic nerve. They also acknowledge that using a 3-minute duration of the intervention is not representative of clinical practice. Other studies do not mobilize a nerve longer than 30 seconds. They were trying to ensure that the neural tissue had enough time to adjust to the tensile load, and eventually to exhibit stress relaxation. They also did not measure the stiffness of the surrounding tissues.

“This particular neurodynamics technique, applied in healthy participants, did not influence the sciatic nerve stiffness”
I agree with the authors that holding knee extension/dorsiflexion in a slump position is not a clinically useful treatment, and add that it can be dangerous. Significant ischemic issues arise with this technique. It is always important to use large grades of movement in neurodynamic mobilizations to allow for blood flow during the treatment. Studies done in a similar manner have left subjects with paralysis for a period of time after the completion of the study. Nothing was noted as to any adverse effects of holding the nerve in a tensioned position for 3 minutes in this study. Furthermore, neural mobilizations affect more than tension. They also affect sliding, compression, blood flow, inflammation and mechanosensitivity. These other factors were not measured.

A normal subject is considered normal because they have an adequate physiological range in a neurodynamic test, often a stretching feeling within the normative distribution, and no excessive stiffness through range. It was not noted that these subjects were tested in the slump and had these qualities, only that they did not have back or lower limb injuries. The authors concluded that this particular neurodynamics technique, applied in healthy participants, did not influence the sciatic nerve stiffness. This technique may need to be applied to a pathological population to determine if it alters the stiffness of the perineurium of the nerve as it is responsible for adapting to tension.

One of the biggest clinical implications here is making sure you are careful when using neurodynamic techniques that you do not stay at end range longer than 3-5 seconds in order to allow blood flow through the nerve. Static end range stretching longer than this is not recommended. There are many factors that are affected with neurodynamic mobilizations, not just tension and nerve stiffness.

+ STUDY REFERENCE


DR CARLO WOOD

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MCKENZIE MECHANICAL SYNDROMES COINCIDE WITH BIOPSYCHOSOCIAL INFLUENCES, INCLUDING CENTRAL SENSITIZATION: A DESCRIPTIVE STUDY OF INDIVIDUALS WITH CHRONIC NECK PAIN

DR SANDY HILTON

BACKGROUND & OBJECTIVE:

McKenzie mechanical diagnostic principles aim to categorize impairments and to provide a framework for treatment. This study was designed to classify mechanical diagnosis and therapy (MDT) along with biopsychosocial influences (BPS) in patients presenting with chronic cervical pain. The investigators had three goals:

1. Determine the percentage of participants categorized into each MDT subgroup.
2. Characterize the BPS contributions including central sensitization (CS) and cognitive-emotional influences.
3. Assess for associations between derangement (DER) and biopsychosocial influences.

METHODS (WHAT THEY DID):

This is a cross-sectional observational study with a mix of convenience sample and recruitment. MDT trained therapists across Canada were asked to participate in the study. These therapists completed a “routine MDT evaluation” and classified the patients into MDT subgroups: derangement, dysfunction, postural, or other.

Participants also completed a battery of online assessments to determine clinical characteristics associated with their pain: numeric pain scale, body map, Central Sensitization Inventory (CSI), Pain Catastrophizing Scale (PCS), Tampa Scale of Kinesiophobia (TSK), along with standard demographic information.
RESULTS/WHAT THEY FOUND:

84 participants met the inclusion criteria and completed the demographic data and pain location forms. 82 patients were classified into subgroups. 75.6% of these were classified as DER. 21 participants did not complete all of the online forms, leaving discrepancies in the group sizes for statistical analysis.

24/63 patients presented with a combination of a mechanical component (DER), signs of central nervous system hypersensitivity (CSI >40), and a significantly high score of fear of movement (TSK/cognitive-emotional influence). The authors report statistical significance between the presence of CS (CSI > 40) and pain catastrophizing (PCS > 30), as well as high perception of disability due to neck pain (NDI > 40).
LIMITATIONS/THINGS TO KEEP IN MIND:

The graphs and tables do not clearly state the number of patients included within the results, and it is important to note that there were patients lost to analysis in each group. This makes the statistics challenging to interpret, as the groups are different sizes throughout the study. The sample size was n= 82 for sub-group analysis, n=71 for central sensitization interpretation, and while it wasn’t clearly stated in the text, Figure 1 implies there was n=65 for interpretation of the cognitive-emotional drivers (TSK and PCS). The interpretation of co-occurrence between DER and CS included n=69 participants. And there were n=63 for a comparison between DER, CS, and cognitive-emotional factors. It is also important to note that for those results that had a statistically significant p value, the confidence intervals were large.

“This study makes a reasonable case for including assessment of central pain states and cognitive-emotional influences into the evaluation of neck pain”
CLINICAL IMPLICATIONS/HOW THIS IMPACTS CLINICAL PRACTICE:

The authors were seeking to show the correlation between DER and CS in people with neck pain. The relationship between movement/motion loss and central pain mechanisms is well supported in the chronic pain literature and in clinical practice. Causation however, is not supported, in that there is not good evidence showing that the DER is sufficient to be a cause of CS.

Despite the challenging statistics, this study makes a reasonable case for including assessment of central pain states and cognitive-emotional influences into the evaluation of neck pain. There is correlation between neck pain and changes in central sensitivity and in catastrophization and fear-avoidance behaviors. If clinicians routinely screen for these influences they can help patients receive appropriate care sooner.

The authors emphasize the need for early identification of central sensitization and addressing this through “biospsychosocially driven rehabilitation, progressive goal attainment programs, and pain education”. They also support identification of cognitive-emotional influences and that these too can be targets of treatment using cognitive behavioral therapy and pain education. The authors point out the limitation of the MDT system in that the rigidity may miss the fluid continuum of the experience of pain, and that by incorporating a strong biopsychosocial assessment from the beginning of the course of care, therapists will be well positioned to provide comprehensive treatment for those with neck pain.

This information is pertinent to MDT trained therapists directly, and also to all therapists working with neck pain. A comprehensive biopsychosocial evaluation is in the best interest of efficient care, providing rationale for treatment planning and addressing peripheral and central influences of pain.

+ STUDY REFERENCE


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RELIABILITY, VALIDITY, AND MINIMAL DETECTABLE CHANGE IN FOUR STEP STAIR CLIMB POWER TEST IN COMMUNITY-DWELLING OLDER ADULTS

MARIANA WINGOOD

BACKGROUND & OBJECTIVES:

For an older adult lower extremity muscle power is an important component of fall prevention and functional mobility. However, many clinicians do not incorporate it into their assessment/interventions strategies. This could be due to limited clinical feasibility of current assessment tools, which is why this study aimed at determining the reliability, validity, and minimal detectable change of a clinically feasible tool – the 4 stair climb power test (4SCPT). The tool requires a scale, stopwatch, and 4 stairs (similar to figure 1) compared to the reliable and valid stair climb power test (SCPT) which requires a full flight of stairs.

METHODS (WHAT THEY DID):

The researchers included older adults (age > 65 years and older) with self-reported mobility difficulties, defined as difficulty with walking ½ mile and/or climbing a flight of stairs. Additionally participants had to be able to score > 4 on the Short Physical Performance Battery (SPPB), finish a 400 meter walk test within 15 min, and have a Mini-Mental Status Exam (MMSE) score of <18. These specific inclusion and exclusion criteria raise a caution flag when it comes to generalizability of results, however, it does examine the type of patient population most encountered in an out-patient clinic.

The research recorded a baseline MMSE, comprehensive history, SPPB, and 6 min walk. Followed by a second day of testing (average of 10.9 days apart), including the SCPT, 4SCPT, and single leg power (SLP) test at 2 intensities – 40% and 70% 1 rep max. The SCPT and 4 SCPT was performed 2 times each with the mean being used for analysis. To limit muscle fatigue rest periods were offered between every test, however, rest time was not specified.

Figure 1: 4-step training staircase
RESULTS (WHAT THEY FOUND):

The participants had an average of 8.6 SPPB score (classifying them as a moderate risk for adverse health outcome) and habitual gait speed of 0.86 m/sec (classifying them at increased risk for falls and frailty) with 76% using the railing to perform the test. This demonstrates that the study population comprised of individuals with mobility limitations.

4SCPT Properties:

<table>
<thead>
<tr>
<th>Numeric Value</th>
<th>Clinical Application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test-retest Reliability</strong></td>
<td>ICC 0.951 (95% CI 0.920-0.972) Excellent reliability</td>
</tr>
<tr>
<td><strong>Concurrent Validity</strong></td>
<td>(between 4SCPT and SCPT) Pearson Correlation: r=0.96</td>
</tr>
<tr>
<td><strong>Criterion Validity</strong></td>
<td>SLP 40 r=0.85</td>
</tr>
<tr>
<td></td>
<td>SLP 70 r=0.86</td>
</tr>
<tr>
<td><strong>Convergent validity</strong></td>
<td>Balance Component r=0.19</td>
</tr>
<tr>
<td></td>
<td>5x STS Component r=-0.14</td>
</tr>
<tr>
<td><strong>Standard Error of Measurement</strong> SEM</td>
<td>18.9 watts</td>
</tr>
<tr>
<td><strong>Minimal Detectable Change</strong></td>
<td>44 watts</td>
</tr>
<tr>
<td><strong>(MDC)</strong></td>
<td>The amount of change in score that is required to exceed measurement error and variability.</td>
</tr>
</tbody>
</table>

LIMITATIONS (THINGS TO KEEP IN MIND):

This study does have several limitations, including:

- Small sample size
- Limited generalizability – due to factors listed above and demographics (most of the participants were Caucasian)
- Did not examine interrater reliability (1 tester performed all the assessments)
**CLINICAL IMPLICATIONS (HOW THIS IMPACTS CLINICAL PRACTICE):**

This study identified that when using the methodology described below, the 4SCPT test is a very valid and reliable outcome measure in the patient population studied.

**Methodology:**

- Stand at base of the stairs.
- Participants are instructed to use handrail at their discretion.
- Tester states “ready, set, go” and participants go up as fast as they can.
- Timing begins when tester states “go” and stops when both feet reach the top of the 4th step.
- Calculate Power:

\[
((\text{body weight in kg}) \times (9.8 \text{m/s}^2) \times (\text{stair height in meter})) \\
	ext{(time in seconds)}
\]

There are excel spreadsheets for download. Once downloaded you can enter key data: weight, stair height, and time in seconds to complete the calculations.

“The 4SCPT test is a very valid and reliable outcome measure”
Generalizability of the 4SCPT:

Currently only appropriate for community dwelling older adults with self-reported mobility difficulties. Once additional validation/reliability studies are published this tests’ generalizability will increase.

Implication:

After determining the patient’s power impairment, you should prescribe appropriate exercises to address this impairment. This could include step ups, sit to stands, heel raises, squats, and lunges. The exercises should be performed with a fast concentric and a slow eccentric component, with the patient fatiguing after 8-12 repetitions. A significant improvement on the 4 SCPT/lower extremity power is defined as a change of > 44 watts.
BACKGROUND & OBJECTIVE:

Carpal tunnel syndrome (CTS) is the most frequently diagnosed peripheral neuropathy. It is thought to involve compression of the median nerve by the carpal tunnel, leading to nerve slide impairment. Many studies have assessed the effectiveness of neurodynamic techniques in treating CTS, but the results are not definitive. This study compared neurodynamic techniques to “sham” therapy in the treatment of mild and moderate CTS.

METHODS (WHAT THEY DID):

150 patients diagnosed with CTS were divided into two groups. One group received therapy with neurodynamic techniques, which consisted of various joint mobilizations, applied by a physiotherapist, and designed to slide or tension the median nerve. The second group received “sham” therapy, which involved a similar set of passive joint mobilizations done in a manner that would not slide or tension the median nerve. Twenty minutes of therapy was done twice weekly for 10 weeks.

The researchers assessed the following before and immediately following treatment: pain; two-point discrimination; strength; and symptom severity and functional impairment according to the Boston Carpal Tunnel Questionnaire.
RESULTS/WHAT THEY FOUND:

A baseline assessment revealed no differences between the two groups in any measure. After therapy, the treatment group improved significantly more than the placebo group in all measures except grip strength. Only the treatment group experienced any significant improvement in sensory and motor conduction velocity and motor latency.

“The treatment group improved significantly more than the placebo group in all measures except grip strength”

LIMITATIONS/THINGS TO KEEP IN MIND:

The study was single, not double blinded. In other words, the patients didn’t know whether they were in the treatment or sham group, but the physiotherapists did. Another limitation is the failure to assess patient status after some passage of time. In other words, it is unknown whether the two groups would have converged to have the same outcome after six months.

VIDEO LINK:

[Click on the image above for video]
CLINICAL IMPLICATIONS/HOW THIS IMPACTS CLINICAL PRACTICE:

Previous studies have shown different results to those in this study. For example, a study by Bialosky compared neurodynamic techniques to sham therapy and found the groups experienced similar improvements. The authors of this study believe they may have obtained better results for the treatment group because their techniques were different than previous studies. Here is a description of the specific techniques:

The following sequence of joint mobilizations were used while the patient was lying down: arm abduction to 90°, arm external rotation, wrist and finger extension, forearm supination and elbow extension. In this sequence, gliding and tension techniques were performed in the proximal and distal direction:

1) one-direction proximal glide mobilization (movement – elbow extension – large amplitude of motion)
2) one-direction distal glide mobilization (movement – wrist extension – large amplitude of motion)
3) one-direction proximal tension mobilization (movement – elbow extension – small amplitude of motion at the end of the movement)
4) one-direction distal tension mobilization (movement – wrist extension – small amplitude of motion).

Treatment consisted of three series of 60 repetitions of glide and tension neurodynamic techniques separated by intervals of 15 seconds, twice a week for 20 sessions. The approximate duration of each session was 20 minutes. While 20 sessions may not be feasible for patients financially in a private practice setting, the neurodynamic sequence described above may be a worthwhile treatment prescription to experiment with for patients with CTS.

+ STUDY REFERENCE


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RUNNERS WITH PATELLOFEMORAL PAIN EXHIBIT GREATER PEAK PATELLA CARTILAGE STRESS COMPARED TO PAIN-FREE RUNNERS

DR BART DINGENEN

BACKGROUND & OBJECTIVE:

Patellofemoral pain (PFP) is the most commonly reported running-related injury. Elevated patellofemoral joint stress is thought to play an important role in the cause of PFP. It remains unclear whether persons with PFP exhibit elevated patellofemoral joint stress during running. Tibiofemoral joint kinematics and kinetics are potential determinants of patellofemoral joint stress. However, it remains unknown which kinematic and/or kinetic variables are predictive of patellofemoral joint stress during running.

The first purpose of the study was to determine whether recreational runners with PFP exhibit greater peak patella cartilage stress compared to pain-free individuals. The second purpose was to determine the kinematic and/or kinetic predictors of peak patella cartilage stress during running.

METHODS (WHAT THEY DID):

Twenty-two female recreational runners participated in the study (12 with PFP (mean 27.6 years) and 10 pain-free controls (mean 27.4 years)). All participants had to run at least 16 km/week. The duration of the PFP symptoms was 43.1±45.6 months in the PFP group.

Biomechanical evaluation of overground running trials at 2.7m/s were performed in a biomechanical laboratory. Kinematic outcomes of interest included peak knee flexion, as well as knee rotations in the frontal and transversal planes at the time of knee flexion. The knee extensor moment was the kinetic variable of interest. Magnetic resonance (MR) assessment was done to evaluate cartilage morphology and bone geometry of the knee and patellofemoral joint. Patella cartilage stress profiles were quantified using subject-specific finite element models. The biomechanical outcomes of interest were compared between groups. In addition, a regression model was used to determine the best kinematic and/or kinetic predictor of peak patella cartilage stress.
RESULTS (WHAT THEY FOUND):

The PFP group exhibited significantly greater peak hydrostatic pressure and peak maximum shear stress. No between group differences were found for contact area or contact forces, and for any of the tibiofemoral joint kinematic or kinetic variables of interest. The combination of knee external rotation and a high knee extensor moment best predicted elevated peak patella cartilage stress during running.

LIMITATIONS (THINGS TO KEEP IN MIND):

Even though three-dimensional motion analysis was used in the study, several concerns regarding reliability can be formulated to measure rotations in the frontal and transversal plane of the knee. The biomechanical outcomes were only evaluated at peak knee flexion. It remains unclear what happens across the rest of the stance phase. Furthermore, the biomechanical comparison between groups was limited to the outcomes of interest. The role of biomechanical alterations at other regions (e.g. foot, hip, pelvis or trunk) remains unclear.

Furthermore, next to running volume, no other training factors such as training history or habitual running speed were mentioned; the duration of symptoms in the PFP group was highly variable; and pain scores or other self-reported outcome measurements were not reported, making it difficult to evaluate the functional status of the runners with PFP in this study. Finally, due to the retrospective design of this study, no causal relationships can be made between greater peak cartilage stress and patellofemoral pain in runners.
CLINICAL IMPLICATIONS (HOW THIS IMPACTS CLINICAL PRACTICE):

This study showed that recreational runners with PFP exhibited 29% elevated peak patella cartilage stress during running, compared to pain-free controls. Furthermore, greater degrees of external rotation of the tibia relative to the femur was associated with higher peak patella cartilage stress. Theoretically, this tibiofemoral rotation can decrease patellofemoral contact area, which would translate to elevated joint stress. As tibiofemoral joint rotation in the transversal plane is the result of relative motion of the femur and tibia, knee external rotation could result from external rotation of the tibia on the femur, or internal rotation of the femur on the tibia. In this study, only one subject demonstrated tibia external rotation at maximum knee flexion during the stance phase, making the authors to suggest that knee external rotation may be more a matter of femur internal rotation as opposed to tibia external rotation. Clinically, this might potentially explain why running retraining focusing on femur positioning and gluteal strengthening have been shown to be effective in runners with PFP.

In addition to tibiofemoral rotation, a greater knee extensor moment was associated with elevated peak patella cartilage stress. It remains essential to use a thorough clinical reasoning process when interpretations of patellofemoral joint loading are made based on running mechanics in clinical practice. The importance of incorporating this biomechanical reasoning within a multidimensional biopsychosocial framework becomes even more important when these findings are related to pain and function. Based on this clinical reasoning, retraining strategies can be formulated.

“Recreational runners with PFP exhibited 29% elevated peak patella cartilage stress during running, compared to pain-free controls.”

STUDY REFERENCE

DO PHYSICAL ACTIVITIES TRIGGER FLARE-UPS DURING AN ACUTE LOW BACK PAIN EPISODE?: A LONGITUDINAL CASE-CROSSOVER FEASIBILITY STUDY.

B E N  C O R M A C K

BACKGROUND & OBJECTIVE:

Many patients believe that their back pain ‘flare-ups’ are triggered by physical activities and/or are affected by the fear that performing these activities will lead to painful events. Personal beliefs about the triggers for back pain are important in activity participation and can often lead to the limitation of normal activities, and increased disability. This is not in line with current guidelines to remain as active as possible without limiting normal daily actions.

Clinicians also often recommend limiting activities to minimise the potential risk of ‘flare-up’, which may actually promote disability in the longer term. This may be due in part to a lack of evidence regarding the cause of ‘flare-ups’ especially of a physical cause. This paper looks to rectify this by studying the physical and psychological factors associated with back pain ‘flare-ups’ in the previous 24hr period via an online survey.

METHODS (WHAT THEY DID):

This study employed a prospective longitudinal case crossover design. 48 participants were recruited with an average age of 49.8 years with low back pain under 3 months duration. Back pain intensity was measured using an 11-point numerical rating scale (NRS). Functional limitations were measured using the Oswestry Disability Index (ODI) ranging between 0-100.

The participants completed online surveys 3 & 7 days after the initial consultation for 6 weeks. This surveyed the triggers for back pain over the 24hrs prior to a ‘flare-up’, including:

1) lifting a heavy object (≥35 lbs.) between 1-5 times, or >5 times, 2) running/jogging, 3) vigorous, non-contact sports (i.e. tennis, swimming, cycling, etc.), 4) vigorous contact sports (i.e. football, hockey, soccer), 5) physical trauma such as a fall, motor vehicle accident, or other trauma, 6) prolonged sitting (>6 hours), 7) prolonged standing (>6 hours), and 8) physical therapy (PT) for LBP.

Participants also reported on emotional triggers in the past 24 hours, including 1) stressful events, 2) depressed mood, and 3) either stress or depression.
RESULTS/WHAT THEY FOUND:

437 surveys were completed by the participants with 328 being included in the final analysis at an average of 11 per participant. The only physical measure that corresponded with flare-ups was prolonged sitting for over 6 hours (OR 4.4, 95% CI 2.0-9.7; p<0.001). Depression and stressful events in the previous 24hrs were also associated with flare-ups (OR 2.5, 95% CI 1.0-6.0; p=0.04). No other activity involving physical exertion was associated with back pain flare-ups in the past 24hrs. Having received physical therapy within the last 24hrs was associated with a small decreased risk of a flare-up.

“Patients do not need to avoid physical activities during an acute LBP episode”
CLINICAL IMPLICATIONS/HOW THIS IMPACTS CLINICAL PRACTICE:

The clinical implications of this study are widespread. Having solid research data that can be used to overcome negative and potentially harmful patient beliefs that lead to the avoidance of physical activities is a potential game changer for the clinician, especially in the world increasingly driven by evidence-based medicine. Secondly, this information can also be used to counter negative information form other healthcare professionals within a work place environment. Thirdly, it can be used to correctly inform patients of what they should and should not be doing to reduce the amount of misinformation that patients may use to form negative beliefs.

Along with current healthcare guidelines this research forms a solid basis from which to provide advice for how patients should act during episodes of acute back pain, and this action may have long-term implications for recurrence or chronicity of the problem. This study suggests that patients do not need to avoid physical activities during an acute LBP episode, and ironically the only thing they should perhaps avoid is being too inactive by sitting for over 6 hours!

+ STUDY REFERENCE

Which of the following was NOT associated with flare-ups in this study?

A) Lifting a heavy object (>35lbs)
B) Depression
C) Sitting longer than 6hrs
D) Stressful events

Click here to link to quiz answer
QUIZ
ANSWERS

Article by Christina Le
Answer: sustaining a second ACL tear; undergoing non-ACL surgery following an initial ACL rupture; or lower baseline SF-36 mental composite score

Article by Dr Teddy Willsey
Answer: B—68%

Article by Simon Kirkegaard
Answer: 92.6% vs 8.3%

Article by Ben Cormack
Answer: A—Lifting a heavy object (>35lbs)

Click author names above to link to the original questions