



Abstracts September 2023

The effect of the stay active advice on physical activity and on the course of acute severe low back pain

Patricia Olaya-Contreras, Jorma Styf, Daniel Arvidsson, Karin Frennered, Tommy Hansson

BMC Sports Science, Medicine and Rehabilitation August 27, 2015

<https://doi.org/10.1186/s13102-015-0013-x>

Abstract:

Background: Disability due to acute low back pain (ALBP) runs parallel with distress and physical inactivity. If low back pain persists, this may lead to long-term sick leave and chronic back pain. This prospective randomized study evaluated the effect on physical activity and on the course of ALBP of two different treatment advice provided in routine care.

Methods: Ninety-nine patients with acute severe LBP examined within 48 h after pain onset were randomized to the treatment advice “Stay active in spite of pain” (stay active group) or “Adjust activity to the pain” (adjust activity group). Pedometer step count and pain intensity (Numeric Rating Scale, NRS, 0–10) were followed daily during seven days. Linear mixed modeling was employed for statistical analyses.

Results: The step count change trajectory showed a curvilinear shape with a steep initial increase reaching a plateau after day 3 in both groups, followed by an additional increase to day 7 in the stay active group only. At day 1, the step count was 4560 in the stay active group compared to 4317 in adjust activity group ($p = 0.76$). Although there were no statistical differences between the two groups in the parameters describing the change trajectory for step count, the increase in step count was larger in the stay active group. At day 7 the step count was 9865 in the stay active group compared to 6609 in the adjust activity group ($p = 0.008$). The pain intensity (NRS) trajectory was similar in the two groups. Between day 1 and day 7 it decreased linearly from 5.0 to 2.8 in the stay active group ($p < 0.001$), and from 4.8 to 2.3 in the adjust activity group ($p < 0.001$).

Conclusions: Patients with acute severe LBP advised to stay active despite the pain exhibited a considerably more active behavior compared to patients adjusting their activity to pain. This result confirms compliance to the treatment advice as well as the utility of the stay active advice to promote additional physical activity for more health benefits in patients with ALBP. There was minimal effect of the treatment advice on the course of ALBP.

Factors Associated with Sports Function and Psychological Readiness to Return to Sports at 12 Months After Anterior Cruciate Ligament Reconstruction a Cross-sectional Study

Anna Cronström PhD, Charlotte K. Häger, PhD, Kristian Thorborg, PhD, Eva Ageberg, PhD

The American Journal of Sports Medicine September 08, 2023

<https://doi.org/10.1177/03635465231192983>

Abstract:

Background: Sports function and psychological readiness to return to sports (RTS) are important outcomes when evaluating rehabilitation after anterior cruciate ligament reconstruction (ACLR). It is however, unclear which specific factors contribute most to these outcomes.

Purpose: To determine associations between demographic characteristics, objective measurements of physical function, patient-reported outcome measure scores, sports-related function assessed with the Knee injury and Osteoarthritis Outcome Score (KOOS) Sport and Recreation subscale, and psychological readiness to RTS assessed with the Anterior Cruciate Ligament–Return to Sport after Injury (ACL-RSI) scale at 1 year after ACLR.

Study Design: Cross-sectional study; Level of evidence, 3.

Methods: At a mean of 12.5 \pm 2.0 months after ACLR, 143 participants (50.3% female), with a mean age of 25.0 \pm 5.7 years, were assessed for demographic characteristics, physical factors (hop performance, muscle strength, ankle and hip range of motion), and psychological factors (KOOS Pain and Symptoms subscales, Perceived Stress Scale, fear of reinjury) as well as the KOOS Sport and Recreation subscale and ACL-RSI scale. Backward linear regression models were used to evaluate factors associated with sports function and psychological readiness to RTS.

Results: Lower isokinetic knee extension peak torque (limb symmetry index) ($B = 18.38$ [95% CI, 3.01-33.75]), lower preinjury activity level ($B = 2.00$ [95% CI, 0.87-3.14]), greater knee pain ($B = 0.90$ [95% CI, 0.70-1.10]), shorter time between injury and reconstruction ($B = 0.16$ [95% CI, 0.05-0.26]), and greater fear of reinjury ($B = 0.11$ [95% CI, 0.01-0.20]) were associated with a worse KOOS Sport and Recreation sub score ($R^2 = 0.683$). A shorter hop distance ($B = 0.15$ [95% CI, 0.00-0.29]) was associated with a lower ACL-RSI score ($R^2 = 0.245$).

Conclusion: A combination of knee muscle strength, activity level, knee pain, timing of surgery, and fear of reinjury accounted for approximately 70% of the variation in sports function at 1 year after ACLR. In contrast, there was only 1 weak association between physical function and psychological readiness to RTS at this time point. Thus, factors associated with current sports function are much better known than features related to psychological readiness to RTS.

Can we really say getting stronger makes your tendon feel better? No current evidence of a relationship between change in Achilles tendinopathy pain or disability and changes in Triceps Surae structure or function when completing rehabilitation: A systematic review.

Myles C. Murphy, Mervyn Travers, Paola Chivers, James Debenham, Clare Arden, Sean I. Docking, Ebonie K. Rio, William Gibson

Journal of Science and Medicine in Sport March 17, 2023

<https://doi.org/10.1016/j.jsams.2023.03.007>

Abstract:

Objectives: Determine if improvements in pain and disability in patients with mid-portion Achilles tendinopathy relate to changes in muscle structure and function whilst completing exercise rehabilitation.

Design: A systematic review exploring the relationship between changes in pain/disability and muscle structure/ function over time, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

Methods: Six online databases and the grey literature were searched from database inception to 16th December 2022 whereas clinical trial registries were searched from database inception to 11th February 2020. We included clinical studies where participants received exercise rehabilitation (\pm placebo interventions) for mid-portion Achilles tendinopathy if pain/disability and Triceps Surae structure/function were measured. We calculated Cohen's d (95 % confidence intervals) for changes in muscle structure/function over time for individual studies. Data were not pooled due to heterogeneity. Study quality was assessed using a modified Newcastle–Ottawa Scale.

Results: Seventeen studies were included for synthesis. No studies reported the relationship between muscle structure/function and pain/disability changes. Twelve studies reported muscle structure/function outcome measures at baseline and at least one follow-up time-point. Three studies reported improvements in force output after treatment; eight studies demonstrated no change in structure or function; one study did not provide a variation measure, precluding within group change over time calculation. All studies were low quality.

Conclusions: No studies explored the relationship between changes in tendon pain and disability and changes in muscle structure and function. It is unclear whether current exercise-based rehabilitation protocols for midportion Achilles tendinopathy improve muscle structure or function.

Systematic review registration: PROSPERO (registration number: CRD42020149970).

Do physical tests have a prognostic value in chronic midportion Achilles tendinopathy?

Céline F.L. Mulder, Arco C. van der Vlist, Marienke van Middelkoop, Adam Weir, Robert F. van Oosterom, Peter L.J. van Veldhoven, Jan A.N. Verhaar, Robert-Jan de Vos

Journal of Science and Medicine in Sport July 04, 2023

<https://doi.org/10.1016/j.jsams.2023.06.014>

Abstract:

Objectives: To determine whether baseline physical tests have a prognostic value on patient-reported outcomes in Achilles tendinopathy.

Design: Prospective cohort study, secondary analysis of data from a randomized trial.

Methods: Patients with chronic midportion Achilles tendinopathy performed a progressive calf muscle exercise program. At baseline and after 2, 6, 12 and 24 weeks, patients completed the Victorian Institute of Sports Assessment—Achilles questionnaire and performed the following physical tests: ankle dorsiflexion range of motion with a bent knee or an extended knee, calf muscle strength, jumping height and pain on palpation (Visual Analogue Scale; 0–100) and after 10 hops (Visual Analogue Scale-10-hops). Associations between baseline test results and improvement (Victorian Institute of Sports Assessment—Achilles scores) were determined using a Mixed Linear Model.

Results: 80 patients were included. The mean Victorian Institute of Sports Assessment—Achilles score improved 20 points (95 % confidence interval, 16–25, $P < .001$) after 24 weeks. There were significant associations between the baseline ankle dorsiflexion range of motion with a bent knee (β 0.2, 95 % confidence interval 0.001 to 0.3, $P = .049$), the baseline pain provocation tests (Visual Analogue Scale palpation: β -0.2; 95 % confidence interval: -0.4 to -0.1; $P < .001$, Visual Analogue Scale-10-hops: β -0.3; 95 % confidence interval: -0.4 to -0.2; $P < .001$) and the change in the Victorian Institute of Sports Assessment—Achilles score.

Conclusions: In patients with chronic midportion Achilles tendinopathy, easy-to-perform pain provocation tests have a clinically relevant prognostic value on patient-reported improvement. Patients with less pain during pain provocation tests at baseline have a better improvement in pain, function and activities after 24 weeks than patients with high baseline pain scores.



Figure 1A



Figure 1B



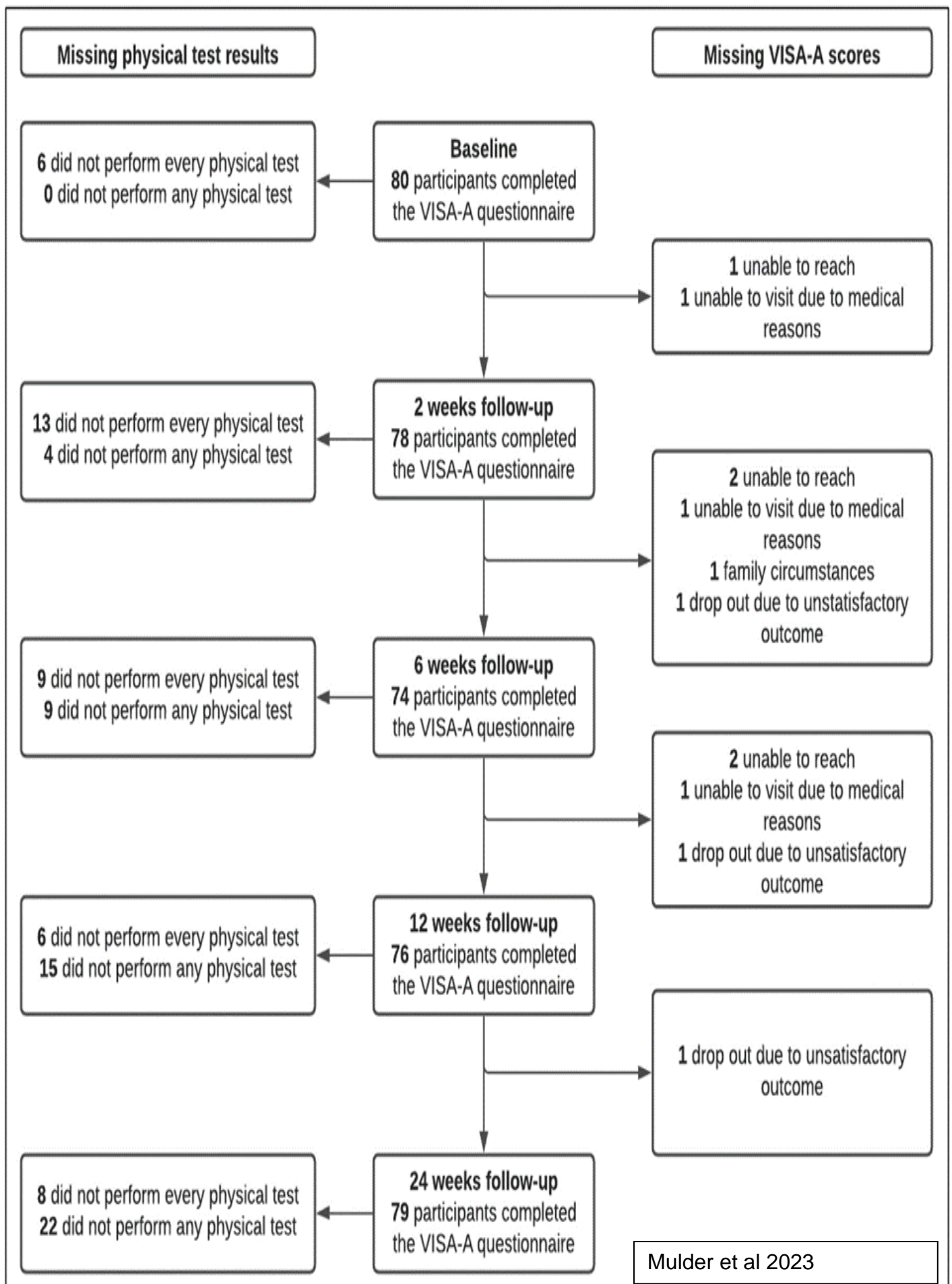
Figure 1C

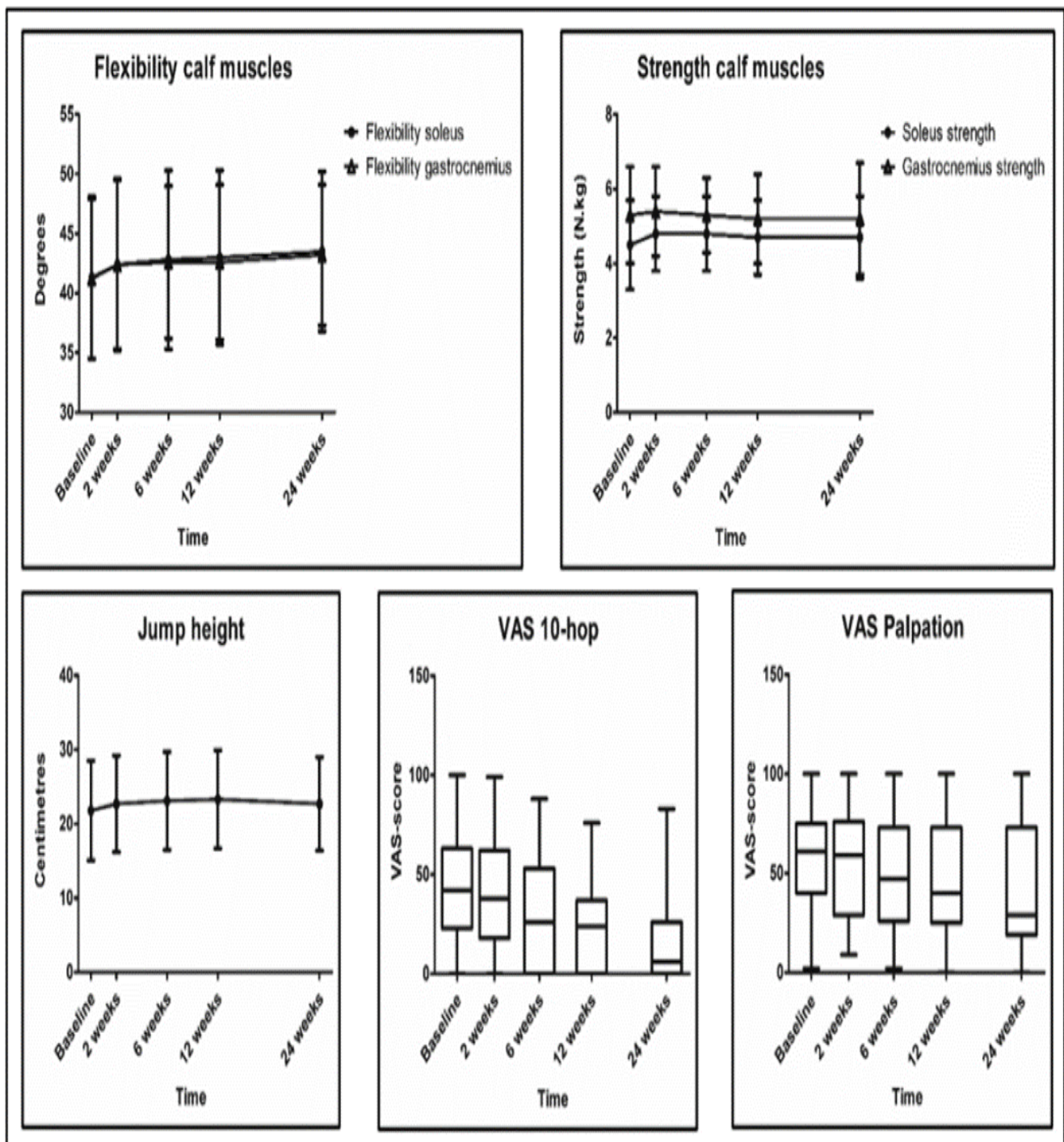


Figure 1D



Figure 1E





Towards improving the identification of anterior cruciate ligament tears in primary point-of-care settings

Jackie L. Whittaker, Michelle Chan, Bo Pan, Imran Hassan, Terry Defreitas, Catherine Hui, Luciana Macedo, David Otto

BMC Musculoskeletal Disorders April 17, 2020

<https://doi.org/10.1186/s12891-020-03237-x>

Abstract:

Background: Only a small proportion of anterior cruciate ligament (ACL) tears are diagnosed on initial healthcare consultation. Current clinical guidelines do not acknowledge that primary point-of-care practitioners rely more heavily on a clinical history than special clinical tests for diagnosis of an ACL tear. This research will assess the accuracy of combinations of patient-reported variables alone, and in combination with clinician-generated variables to identify an ACL tear as a preliminary step to designing a primary point-of-care clinical decision support tool.

Methods: Electronic medical records (EMRs) of individuals aged 15–45 years, with ICD-9 codes corresponding to a knee condition and confirmed (ACL+) or denied (ACL–) first-time ACL tear seen at a university-based Clinic between 2014 and 2016 were eligible for inclusion. Demographics, relevant diagnostic indicators and ACL status based on orthopedic surgeon assessment and/or MRI reports were manually extracted. Descriptive statistics calculated for all variables by ACL status. Univariate between group comparisons, clinician surveys ($n = 17$), availability of data and univariable logistic regression (95%CI) were used to select variables for inclusion into multivariable logistic regression models that assessed the odds (95%CI) of an ACL-tear based on patient-reported variables alone (consistent with primary point-of-care practice), or in combination with clinician-generated variables. Model performance was assessed by accuracy, sensitivity, specificity, positive and negative predictive values, and positive and negative likelihood ratios (95%CI).

Results: Of 1512 potentially relevant EMRs, 725 were included. Participant median age was 26 years (range 15–45), 48% were female and 60% had an ACL tear. A combination of patient-reported (age, sport-related injury, immediate swelling, family history of ACL tear) and clinician-generated (Lachman test result) variables were superior for ACL tear diagnosis [accuracy; 0.95 (0.90,0.98), sensitivity; 0.97 (0.88,0.98), specificity; 0.95 (0.82,0.99)] compared to the patient-reported variables alone [accuracy; 84% (77,89), sensitivity; 0.60 (0.44,0.74), specificity; 0.95 (0.89,0.98)].

Conclusions: A high proportion of individuals without an ACL tear can be accurately identified by considering patient-reported age, injury setting, immediate swelling and family history of ACL tear. These findings directly inform the development of a clinical decision support tool to facilitate timely and accurate ACL tear diagnosis in primary care settings.

Mechanisms of action of therapeutic exercise for knee and hip OA remain a black box phenomenon: an individual patient data mediation study with the OA Trial Bank

Jos Runhaar, Melanie A Holden, Miriam Hattle, Jonathan Quicke, Emma Louise Healey, Danielle van der Windt, Krysia S Dziedzic, Marienke van Middelkoop, Sita Bierma-Zeinstra, Nadine E Foster, Rheumatic & Musculoskeletal Diseases July 24, 2023
<http://dx.doi.org/10.1136/rmdopen-2023-003220>

Abstract:

Objectives: To evaluate mediating factors for the effect of therapeutic exercise on pain and physical function in people with knee/hip osteoarthritis (OA).

Methods: For Subgrouping and Targeted Exercise Programs for knee and hip Osteoarthritis (STEER OA), individual participant data (IPD) were sought from all published randomized controlled trials (RCTs) comparing therapeutic exercise to nonexercised controls in people with knee/hip OA. Using the Counterfactual framework, the effect of the exercise intervention and the percentage mediated through each potential mediator (muscle strength, proprioception and range of motion (ROM)) for knee OA and muscle strength for hip OA were determined.

Results: Data from 12 of 31 RCTs of STEER OA (1407 participants) were available. Within the IPD data sets, there were generally statistically significant effects from therapeutic exercise for pain and physical function in comparison to non-exercise controls. Of all potential mediators, only the change in knee extension strength was statistically and significantly associated with the change in pain in knee OA (β -0.03 (95% CI -0.05 to -0.01), 2.3% mediated) and with physical function in knee OA (β -0.02 (95% CI -0.04 to -0.00), 2.0% mediated) and hip OA (β -0.03 (95% CI -0.07 to -0.00), no mediation).

Conclusions: This first IPD mediation analysis of this scale revealed that in people with knee OA, knee extension strength only mediated $\pm 2\%$ of the effect of therapeutic exercise on pain and physical function. ROM and proprioception did not mediate changes in outcomes, nor did knee extension strength in people with hip OA. As 98% of the effectiveness of therapeutic exercise compared with non-exercise controls remains unexplained, more needs to be done to understand the underlying mechanisms of actions.

Changes in pain catastrophizing, fear-avoidance beliefs, and pain self-efficacy mediate changes in pain intensity on disability in the treatment of chronic low back pain

Truls Ryum, Tore C. Stiles

International Association for the Study of Pain September 13, 2023

DOI: 10.1097/PR9.0000000000001092

Abstract:

Introduction: Treatment of chronic low back pain (CLBP) based on the fear-avoidance model (FAM) has received support in randomized controlled trials, but few studies have examined treatment processes associated with treatment outcome. This study examined changes in pain catastrophizing, fear-avoidance beliefs, and pain self-efficacy as mediators of the relation between changes in pain intensity and disability in exposure-based treatment of CLBP.

Methods: Data from a randomized controlled trial with 2 treatment arms (exposure treatment based on the FAM with/without in-session exposure) was pooled, including only participants with complete data (N = 69). Change scores (pre to booster session) were computed for all variables, and the indirect effect of change in pain intensity on change in 3 measures of disability, through change in the proposed mediators, was tested in parallel mediation analyses.

Results: Decreases in pain catastrophizing and fear-avoidance beliefs, as well as increases in pain self-efficacy, mediated a unique proportion of the relation between changes in pain intensity and disability, depending on the outcome measure. The direct relation between changes in pain intensity and disability was absent when indirect effects were controlled.

Conclusions: The results suggest that the way pain is interpreted (pain catastrophizing, fear-avoidance beliefs), as well as pain self-efficacy, are all more critical for reducing disability in exposure-based treatment of CLBP than symptom relief per se.

Clinical Study The impact of aggregate positive lifestyle behaviors on low back pain resilience and care seeking.

Katharine E. Roberts, M Res, Paula R. Beckenkamp, PhD, Manuela L. Ferreira, PhD, Emma K. Ho, PhD, Ana P. Carvalho-e-Silva, PhD, Lucas Calais-Ferreira, PhD, Paulo H. Ferreira, PhD

The Spine Journal June 17, 2023

<https://doi.org/10.1016/j.spinee.2023.06.388>

Abstract:

Background Context: Low back pain (LBP) is a global issue, and the high associated costs are mainly attributed to a small proportion of people with LBP who seek care. Importantly, the impact of aggregate positive lifestyle behaviors on LBP resilience and care seeking is not known.

Purpose: This study aimed to evaluate the relationship between positive lifestyle behaviors and LBP resilience.

Study Design: This study was a prospective longitudinal cohort study.

Patient Sample: Data was collected as part of the AUstralian Twin BACK Study (AUTBACK). Participants who reported a lifetime previous history of LBP at baseline were included in this analysis (n = 340).

Outcome Measures: The outcomes of interest were the number of weeks without activity limiting LBP and total number of days of healthcare usage, health practitioner care, self-management care, and medication intake.

Methods: A lifestyle behavior score was built using variables of body mass index (BMI), physical activity, smoking status, and sleep quality. Negative binomial regression analyses were used to assess the relationship between the positive lifestyle behavior score and the count outcomes of number of weeks without activity limiting LBP and number of days participants used care.

Results: After adjusting for covariates, no association was found between participants' positive lifestyle behavior score and their number of weeks without activity limiting LBP (IRR: 1.02, 95% CI 1.00–1.05). There was a statistically significant relationship between higher positive lifestyle behavior scores and fewer number of days of participants' total healthcare usage (IRR:0.69, 95% CI 0.56–0.84), healthcare practitioner visits (IRR:0.62, 95% CI 0.45–0.84), use of self-management strategies (IRR:0.74, 95% CI 0.60–0.91), and use of pain medication (IRR:0.55, 95% CI 0.44–0.68).

Conclusion: People who adopt optimal lifestyle behaviors, such as engaging in adequate physical activity, achieving optimal quality sleep, maintaining an ideal BMI, and not smoking, may not experience less time suffering from activity limiting LBP, but are less likely to use healthcare and pain medication for their LBP.

Exercise treatments for lumbar spinal stenosis: A systematic review and intervention component analysis of randomized controlled trials

*Christine Comer, Esther Williamson, Suzanne McIlroy, Cynthia Srikesavan,
Sally Dalton, G. J Melendez-Torres, Sarah E. Lamb*

Clinical Rehabilitation September 16, 2023

<https://doi.org/10.1177/02692155231201048>

Abstracts:

Objective: To analyze the components used in exercise interventions for people with symptoms of neurogenic claudication due to lumbar spinal stenosis and identify components associated with successful interventions.

Data sources: Eligible papers published up to April 2023 from MEDLINE, EMBASE, CINAHL, PEDro, CENTRAL, Web of Science, and trial registry websites.

Review methods: Literature searches were performed by an Information Specialist. We searched for randomized trials evaluating exercise interventions for people with neurogenic claudication symptoms (the primary symptom of lumbar spinal stenosis). Two authors independently performed study selection, data extraction, and quality assessments using the Cochrane Risk of Bias tool Version 2 and the TIDieR checklist for intervention reporting. Details of intervention components were extracted, tabulated, and synthesized using an intervention component analysis approach.

Results: We found thirteen trials reporting 23 exercise interventions delivered to 1440 participants. These featured 60 different components. Most exercise

interventions included supervision and flexion-based exercises. Balance exercises were rarely included. Exercise components featured more frequently in successful interventions included stretches, strength or trunk muscle exercises, fitness exercises, especially cycling, and psychologically informed approaches. Interpretation is limited by low study numbers and heterogeneity. No conclusions could be drawn about exercise supervision or dose.

Discussion: Exercise interventions for people with neurogenic claudication typically feature multiple components. Common features such as supervision, lumbar flexion, and aerobic fitness exercises and fewer common features such as stretches, strengthening exercises, and psychologically informed approaches warrant consideration for inclusion when designing and optimizing exercise interventions for people with lumbar spinal stenosis.

Concerns on the Science and Practice of a Movement System

Christopher T. Joyce, PT, DPT, PhD, Jason M. Beneciuk, PT, DPT, PhD, MPH, Steven Z. George, PT, PhD, FAPTA

Physical Therapy & Rehabilitation Journal September 08, 2023

<https://doi.org/10.1093/ptj/pzad087>

Abstract:

Introduction: Theoretically, the movement system is the integration of body systems that generates and maintains all movements contributing to individual function. Movement diagnoses are diagnostic labels ascribed to movements that are hypothesized to be aberrant. In the context of the International Classification of Functioning, Disability and Health framework, a movement diagnosis may be most appropriately positioned as a “body systems impairment.” Recently, movement diagnoses have been put forth as fundamental to the movement system that is being advocated as a model for physical therapy management. However, we caution against expeditious advancement of practice approaches that have yet to be empirically substantiated. In this Point of View, we look at the science behind a movement system diagnosis. We highlight scientific challenges facing the adoption of the proposed movement system as a cornerstone of clinical practice as it relates to the International Classification of Functioning, Disability and Health model.

“Nociplastic Pain”: A Challenge to Nosology and to Nociception

Milton Cohen, John Quintner, Asaf Weisman

The Journal of Pain July 21, 2023

<https://doi.org/10.1016/j.jpain.2023.07.019>

Abstract:

The construct of “nociplastic pain” has met with divergent receptions. On the one hand it has been enthusiastically embraced, to the extent of conflation with central sensitization of nociception and the International Classification of Diseases 11th

Revision (ICD-11) entity of “primary” pain, and the promulgation of “nociplastic pain syndromes.” On the other hand, it has been rejected by those whose skepticism derives from the absence, by definition, of underlying activation of nociceptors. This article seeks to dissect these divergent views and search for reconciliation between them. One line of argument is that “nociplastic” pain, “primary” pain, and “central sensitization of nociception” reflect different domains of inquiry and should not be conflated. “Nociplastic” pain emerges as a hypothesis that confers clinical legitimacy and utility; while that hypothesis needs a minor but important modification and continues to require testing, discipline in its usage is necessary. The other line of argument discovers an unexpected impasse: the construct of “nociplastic pain” describes a phenomenon that accords with the International Association for the Study of Pain definition of pain but occurs in the absence of nociception-as-currently-defined, thus challenging the definitional link between pain and tissue damage. The article offers a resolution of this impasse by suggesting that nociception-as-currently-defined be replaced by the resurrected concept of a nociceptive apparatus, activation of which is necessary but not sufficient for the experience of pain. One consequence would be to allow the assertions underpinning “nociplastic” to be tested empirically; another would be to relate the phenomenon of pain to a more biologically plausible basis than “actual” or “resemblance to” tissue damage.

Perspective: This article explores the major challenges posed by “nociplastic pain” to nosology and to nociception. While discipline in the clinical use of the construct is required, it also emerges that the main issue is the International Association for the Study of Pain definition of nociception. A reconceptualization of nociception is proposed for logical, biological, and clinical coherence.

The McKenzie Method versus guideline-based advice in the treatment of sciatica: 24-month outcomes of a randomized clinical trial

Sinikka Kilpikoski, Arja H Häkkinen, Jussi P Repo, Kati Kyrölä, Juhani Multanen, Markku Kankaanpää, Aki Vainionpää, Esa-Pekka Takala, Hannu Kautiainen, Jari Ylinen

Clinical Rehabilitation August 21, 2023

<https://doi.org/10.1177/02692155231196393>

Abstract:

Objective: To compare the effectiveness of a McKenzie Method intervention in patients with sciatica with guideline-based patient education.

Design: Multi-center, assessor-blinded, parallel-group, randomized trial

Setting: Two tertiary hospitals providing operative spinal care.

Subjects: Sciatica patients with magnetic resonance imaging-confirmed lumbar disc herniation compressing a nerve root.

Interventions: The McKenzie group received specific back exercises for seven visits combined with an educational book, and the Control group received a single session of self-management guidance according to usual practices.

Main measures: The primary outcome was the number of surgical operations. Secondary outcomes were pain measured using the Visual Analogue Scale, disability using the Oswestry Disability Index and health-related quality of life using a RAND-36 questionnaire at baseline and 24-month follow-up.

Results: Altogether 66 patients, mean age of 43 years, of which 50% were females with long-lasting sciatica, mean 16 weeks, were randomized to two groups. Nineteen patients (29%) had surgery. There was no significant difference in surgery rates between the groups. Back and leg pain decreased, and disability improved in both groups. Health-related quality of life improved in six dimensions out of eight in both groups. There were no significant between-group changes in the patient-reported outcomes at the follow-up.

Conclusions: Multiple sessions of McKenzie-based back exercises with a McKenzie-specific patient's educational book produced effects equal to guideline-based advice at long-term follow-up. However, the power of these results is diminished due to the small patient population and confounding factors.

Perspective Specific and nonspecific low back pain—mind the gap and its impact in clinical practice: opinion of a recovering interventional spine physiatrist.

Mustafa Farooque MD, MEd

The Spine Journal April 18, 2023

<https://doi.org/10.1016/j.spinee.2023.04.011>

Abstract:

Introduction: Years ago, at a spine conference, I came across one of the authors of several landmark studies on the causes of low back pain (LBP) published in the mid-90s. During the coffee break, I casually asked the author's opinion on how often we could identify a pain generator in LBP with certainty. The answer was, "in about half of the cases." We face this challenge every time we encounter a patient with LBP. Our patients often ask us the same question, "Doc, what is causing my back pain?" During my fellowship training in interventional spine physiatry in the late last century, I was overenthusiastic about my ability to make a definitive diagnosis of LBP and overconfident about fixing these conditions using different spinal injection techniques I was learning. In subsequent years, I was discouraged by the fact that many of my spinal injections did not fix their LBP. I questioned my clinical acumen and technical precision. I was stressed as I struggled to find pain generators while others were finding and treating them. As I shared my concern, several interventional pain specialists at our facility insinuated that this was me. I honed my history taking and physical examination, improved my ability to read spine images, attended many cadaver courses, and studied all the procedural books that I could gather to sharpen my skills. I did not observe any appreciable change in the outcome of my procedures. At that point, I questioned our ability to definitively identify pain generators in LBP and to successfully treat them. The conundrum of specific and nonspecific LBP (NSLBP) began to creep in.

Animal model for tendinopathy

Junchao Luo, Zetao Wang, Chenqi Tang, Zi Yin, Jiayun Huang, Dengfeng Ruan, Yang Fei, Canlong Wang, Xianan Mo, Jiajin Li, Jun Zhang, Cailian Fang, Jianyou Li, Xiao Chen, Weiliang Shen

Journal of Orthopedic Translation June 30, 2023

<https://doi.org/10.1016/j.jot.2023.06.005>

Abstract:

Background: Tendinopathy is a common motor system disease that leads to pain and reduced function. Despite its prevalence, our mechanistic understanding is incomplete, leading to limited efficacy of treatment options. Animal models contribute significantly to our understanding of tendinopathy and some therapeutic options. However, the inadequacies of animal models are also evident, largely due to differences in anatomical structure and the complexity of human tendinopathy. Different animal models reproduce different aspects of human tendinopathy and are therefore suitable for different scenarios. This review aims to summarize the existing animal models of tendinopathy and to determine the situations in which each model is appropriate for use, including exploring disease mechanisms and evaluating therapeutic effects.

Methods: We reviewed relevant literature in the PubMed database from January 2000 to December 2022 using the specific terms ((tendinopathy) OR (tendinitis)) AND (model) AND ((mice) OR (rat) OR (rabbit) OR (lapin) OR (dog) OR (canine) OR (sheep) OR (goat) OR (horse) OR (equine) OR (pig) OR (swine) OR (primate)). This review summarized different methods for establishing animal models of tendinopathy and classified them according to the pathogenesis they simulate. We then discussed the advantages and disadvantages of each model, and based on this, identified the situations in which each model was suitable for application.

Results: For studies that aim to study the pathophysiology of tendinopathy, naturally occurring models, treadmill models, subacromial impingement models and metabolic models are ideal. They are closest to the natural process of tendinopathy in humans. For studies that aim to evaluate the efficacy of possible treatments, the selection should be made according to the pathogenesis simulated by the modeling method. Existing tendinopathy models can be classified into six types according to the pathogenesis they simulate: extracellular matrix synthesis-decomposition imbalance, inflammation, oxidative stress, metabolic disorder, traumatism and mechanical load.

Conclusions: The critical factor affecting the translational value of research results is whether the selected model is matched with the research purpose. There is no single optimal model for inducing tendinopathy, and researchers must select the model that is most appropriate for the study they are conducting. This paper provides a rationale and practical guide for the establishment and selection of animal models of tendinopathy, which is helpful to improve the clinical transformation ability of existing models and develop new models.

Transforming traditional physiotherapy hands-on skills teaching into video-based learning

Helena Luginbuehl, Sabine Nabecker, Robert Greif, Stefan Zuber, Irene Koenig, Slavko Rogan

BMC Medical Education September 01, 2023

<https://doi.org/10.1186/s12909-023-04556-y>

Abstract:

Background: Pandemic-induced restrictions forced curriculum transformation from on-site education to virtual learning options. This report describes this transition, the challenge of creating technology-enhanced learning for hands-on psychomotor skills teaching in physiotherapy, and students' evaluations of the new technology-enhanced learning approach in Complex Decongestive Physiotherapy.

Methods: On-site theoretical background lectures were replaced with e-learning sessions. Faculty hands-on skills demonstrations for the entire class were replaced with video-recorded demonstrations. Videos included verbal and written instructions and were complemented with checklists guiding the students, training in pairs, through their learning tasks. A cross-sectional observational survey for teaching quality evaluated this new technology-enhanced learning approach and assessed students' preference for traditional or video-based hands-on skills learning.

Results: Survey return rate was >50% (46 participating students). Teaching quality was rated between 1.5 ± 0.5 and 1.8 ± 0.4 (Likert scale from -2 to +2). Most students (66.7%) preferred the new approach. They appreciated for example that videos were available all the time, enabling self-paced learning, providing an equally good view on skills demonstrations, and the convenience to be able to rewind, re-view, and use speed adjustment options.

Conclusions: Students preferred the new video-based learning of skills for Complex Decongestive Physiotherapy. Because in-class live skills demonstrations were omitted, faculty had more time to provide individual feedback and answer questions. The shift from teacher- to student-centered learning enabled students to control their own learning pace. The innovative program was maintained after pandemic-induced restrictions were lifted. The success of this approach should be tested in other physiotherapy settings and different educational institutions.

The cervical spine in tension type headache

Cesar Fernandez-de-las-Penas, Chad Cook, Joshua A. Cleland, Lidian L. Florencio

Musculoskeletal Science and Practice May 16, 2023

<https://doi.org/10.1016/j.msksp.2023.102780>

Abstract:

Introduction: The concept that headaches may originate in the cervical spine has been discussed over decades and is still a matter of debate. The cervical spine has been traditionally linked to cervicogenic headache; however, current evidence supports the presence of cervical musculoskeletal dysfunctions also in tension-type headache.

Purpose: This position paper discusses the most updated clinical and evidence-based data about the cervical spine in tension-type headache.

Implications: Subjects with tension-type headache exhibit concomitant neck pain, cervical spine sensitivity, forward head posture, limited cervical range of motion, positive flexion-rotation test and cervical motor control disturbances. In addition, the referred pain elicited by manual examination of the upper cervical joints and muscle trigger points reproduces the pain pattern in tension-type headache. Current data supports that the cervical spine can be also involved in tension-type headache, and not just in cervicogenic headache. Several physical therapies including upper cervical spine mobilization or manipulation, soft tissue interventions (including dry needling) and exercises targeting the cervical spine are proposed for managing tension-type headache; however, the effectiveness of these interventions depends on a proper clinical reasoning since not all will be equally effective for all individuals with tension-type headache. Based on current evidence, we propose to use the terms cervical “component” and cervical “source” when discussing about headache. In such a scenario, in cervicogenic headache the neck can be the cause (source) of the headache whereas in tension-type headache the neck will have a component on the pain pattern, but it will be not the cause since it is a primary headache.

