Abstracts May 2023

Quadriceps and hamstring anterior cruciate ligament reconstruction differ only marginally in function after the rehabilitation: a propensity score-matched case–control study.

Daniel Niederer Matthias Keller Sarah Jakob-Wolf Petersen, Natalie Mengis Lutz Vogt Daniel Guenther Georg Brandl Björn H. Drews Michael Behringer Thomas Stein David A. Groneberg
Knee Surgery, Sports Traumatology, Arthroscopy April 17, 2023

Abstract

Purpose: To determine potential quadriceps versus hamstring tendon autograft differences in neuromuscular function and return to sport (RTS)-success in participants after an anterior cruciate ligament (ACL) reconstruction.
Methods: Case–control study on 25 participants operated on with an arthroscopically assisted, anatomic ipsilateral quadriceps femoris tendon graft and two control groups of 25 participants each, operated on with a semitendinosus tendon or semitendinosus-gracilize (hamstring) tendon graft ACL reconstruction. Participants of the two control groups were propensity score matched to the case group based on sex, age, Tegner activity scale and either the total volume of rehabilitation since reconstruction (n=25) or the time since reconstruction (n=25). At the end of the rehabilitation (averagely 8 months postreconstruction), self-reported knee function (KOOS sum scores), fear of loading the reconstructed knee during a sporting activity (RSI-ACL questionnaire), and fear of movement (Tampa scale of kinesiophobia) were followed by hop and jump tests. Front hops for distance (jumping distance as the outcome) were followed by Drop jumps (normalized knee joint separation distance) and concluded by qualitative ratings of the Balanced front and side hops. Between-group comparisons were undertaken using 95% confidence intervals comparisons, effect sizes were calculated.
Results: The quadriceps case group (always compared with the rehabilitation-matched hamstring graft controls first and versus time-matched hamstring graft controls second) had non-significant and only marginal higher self-reported issues during sporting activities: Cohen's d=0.42, d=0.44, lower confidence for RTS (d=− 0.30, d=− 0.16), and less kinesiophobia (d= −0.25, d=0.32). Small and once more non-significant effect sizes point towards lower values in the quadriceps graft groups in the Front hop for distance limb symmetry values in comparison to the two hamstring control groups (d= − 0.24, d=− 0.35). The normalized knee joint separation distance was non-significantly and small effect sized higher in the quadriceps than in the hamstring groups (d=0.31, d=0.28).
Conclusion: Only non-significant and marginal between-graft differences in the functional outcomes at the end of the rehabilitation occurred. The selection of either a

hamstring or a quadriceps graft type cannot be recommended based on the results. The decision must be undertaken individually.
Level of evidence III.

Association between clinical findings and the presence of lumbar spine osteoarthritis imaging features: A systematic review

Mirna Chamoro, Katie de Luca, Omer Ozbulut, Edwin H.G. Oei, Bart W. Koes, Carmen L.A. Vleggeert- Lankamp, Sita M.A. Bierma- Zeinstra, Alessandro Chiarotto
Osteoarthritis and Cartilage April 29, 2023
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Summary

Objective: Spinal osteoarthritis is difficult to study and diagnose, partly due to the lack of agreed diagnostic criteria. This systematic review aims to give an overview of the associations between clinical and imaging findings suggestive of spinal osteoarthritis in patients with low back pain to make a step towards agreed diagnostic criteria.
Design: We searched MEDLINE, Embase, Web of Science, and CINAHL from inception to April 29, 2021, to identify observational studies in adults that assessed the association between selected clinical and imaging findings suggestive of spinal osteoarthritis. Risk of bias was assessed using the Newcastle Ottawa Scale and the quality of evidence was graded using an adaptation of the GRADE approach.
Results: After screening 7902 studies, 30 met the inclusion criteria. High-quality evidence was found for the longitudinal association between low back pain (LBP) intensity, and both disc space narrowing and osteophytes, as well as for the association between LBP-related physical functioning and lumbar disc degeneration, the presence of spinal morning stiffness and disc space narrowing and for the lack of association between physical functioning and Schmorl's nodes.
Conclusions: There is high- and moderate-quality evidence of associations between clinical and imaging findings suggestive of spinal osteoarthritis. However, most of the studied outcomes had low or very low-quality of evidence. Furthermore, clinical and methodological heterogeneity was a serious limitation, adding to the need for and importance of agreed criteria for spinal osteoarthritis, which should be the scope of future research.

Relationship of Healthy Building Determinants with Back and Neck Pain: A Systematic Review

Ezequiel D. Gherscovici and John M. Mayer
American Journal of Health Promotion July 9, 2022
https://doi.org/10.1177/08901171221112571

Abstract:

Objective: Back pain and neck pain are very common, costly, and disabling. Healthy building determinants within the built environment have not been adequately assessed as contributors to these conditions. The objective of this study was to systematically review the literature on the relationship of healthy building determinants with back and neck pain.
Data Source: PubMed, CINAHL, EMBASE, Google Scholar, and PEDRo. Study Inclusion and Exclusion Criteria: Studies were included if they met the following criteria: Adults, comparison of healthy building determinants (air quality, ventilation, dust and pests, lighting and views, moisture, noise, safety/security, thermal health, water quality) with back and neck pain, original research, English. Studies were excluded if full text articles were unavailable and if the focus was patient and materials handling or ergonomics.
Data Extraction: Data extraction and other review procedures were elaborated according to PRISMA guidelines. Data Synthesis: Data were synthesized with an approach adapted from Oxford Centre for Evidence-Based Medicine and American Physical Therapy Association.
Results: 37 articles enrolling 46,223 participants were eligible. Most articles were cross-sectional (31/37) and fair quality (28/37). None were interventional. Evidence was found to generally support a relationship indicating that as healthy building determinants worsen, the risk of back and neck pain increases.
Conclusion: Although the available evidence precludes interpretations about causality, the study's findings are starting points to guide future research, knowledge creation, and health promotion initiatives about the relationships of the built environment with back and neck pain.

Relationship of Healthy Building Determinants with Musculoskeletal Disorders of the Extremities: A Systematic Review

Ezequiel D. Gherscovici, John M. Mayer
Cureus April 11, 2023
DOI: 10.7759/cureus.37456

Abstract:

Musculoskeletal disorders (MSDs) are a substantial societal burden and various factors affect their causation, recovery, and prognosis. Management of MSDs is complex and requires multifaceted interventions. Given the challenges of MSDs and their continued burden, it is possible that additional elements could impact these disorders that have not been fully researched, for example, indoor environmental

quality. Our previous review provided preliminary evidence that healthy building determinants (HBDs) are associated with the risk of back and neck pain. However, the relationship of HBDs with extremity MSDs and general MSDs (i.e., MSDs involving multiple body regions or in which body regions were unspecified in the original reports) has not been formally studied. The purpose of this review was to conduct a systematic literature review to assess the relationship of HBDs with extremity and general MSDs (PROSPERO ID: CRD42022314832). PubMed, CINAHL, Embase, and PEDRo databases were searched through April 2022. Inclusion criteria for study eligibility were as follows: humans of ages ≥18 years, reported on one or more of eight HBDs (1. air quality and ventilation, 2. dust and pests, 3. lighting and views, 4. moisture, 5. noise, 6. safety and security, 7. thermal health, 8. water quality), and compared these HBDs with extremity MSDs or general MSDs, original research, English. Exclusion criteria were as follows: articles not published in peer-reviewed journals; full-text articles unavailable. Review procedures were conducted and reported in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations. Empirical evidence statements were developed for 33 pairwise comparisons of HBDs with MSDs. The search uncovered 53 eligible studies with 178,532 participants. A total of 74.6% (39/53) of the studies were cross-sectional and 81.1% (43/53) were fair quality. Overall, most of the uncovered evidence indicates that HBDs are related to risk of extremity and general MSDs. Nineteen comparisons support that as HBDs worsen, the risk of MSDs increases. Six comparisons had conflicting evidence. Three comparisons support that poor HBDs are not related to increased risk of extremity and general MSDs. Five comparisons had no evidence. This systematic review builds upon previous work to provide useful starting points to enhance awareness about the HBD-MSD relationship. These findings can help inform research and public health efforts aimed at addressing suboptimal HBDs through appropriate interventions to improve the lives of those suffering from MSDs.

Broken Machines or Active Bodies? Part 1. Ways of Talking About Health and Why It Matters

Samantha Bunzli, BPhty(Hons) Grad Cert, PhD, Nicholas F. Taylor, BSc, PT, PhD, Penny O'Brien, BHealthSci(Hons), PhD, Jason A. Wallis, PT, PhD, J.P. Caneiro, PT, MSc, FACP, PhD, Robyn Woodward-Kron, BA, MA, GradDipArts, PhD, David J. Hunter, MBBS(Hons), MSc, MSpMed, FRACP, PhD, Peter F. Choong, MBBS, FRACP, Michelle M. Dowsey, B Health Sci, PGDip Adv Clin Prac, Dip Frontline Mgmt PGradCert, GradCert, MEpi, PhD, Nora Shields, BSc(Hons), Grad Dip Stats, Grad Cert Higher Ed, PhD
Journal of Orthopedic & Sports Physical Therapy April 27, 2023
https://www.jospt.org/doi/full/10.2519/jospt.2023.11879

Abstract:

Synopsis: This editorial series raises awareness among clinicians about how ways of talking about orthopedic conditions can influence what people who are seeking health care (1) think about their health and (2) what they do to manage their health. In part 1, we introduce you to ways of talking about health, using osteoarthritis as a case study. In part 2, we describe 2 contrasting ways of talking about osteoarthritis

and how changing the way you share information and ideas with people seeking care may impact clinical decisions. In part 3, we offer strategies to help you shift the way you communicate with people with osteoarthritis to promote uptake of best practice recommendations and support healthy, active lifestyles.

Cognitive functional therapy for chronic disabling low back pain

Ney Meziat-Filho, Jessica Fernandez, Julia Castro
The Lancet May 2, 2023
https://doi.org/10.1016/S0140-6736(23)00571-8

Cognitive functional therapy (CFT) is a physiotherapy-led intervention that is psychologically informed and directed at the multidimensional biopsychosocial nature of low back pain.1 Peter Kent and colleagues2 (RESTORE) aimed to compare the effectiveness and economic efficiency of CFT, delivered with or without movement sensor biofeedback, with usual care for patients with chronic disabling low back pain in 20 primary care physiotherapy clinics in Perth, WA, and Sydney, NSW, Australia. Kent and colleagues randomly assigned492 participants into three groups: usual care (n=165 [34%]), CFT plus biofeedback (n=163 [33%]), and CFT plus sham biofeedback (n=164 [33%]). The mean age of the participants was 47·3 years (SD 15·2), 292 (59%) were female, 200 (41%) were male, and 243 (49%) had university education. No ethnicity data were reported. At 13 weeks, 418 (85%) participants completed the primary outcome of disability assessed with the 0–24 Roland Morris Disability Questionnaire (141 [85%] in the usual care group, 141 [86%] in the CFT only group, and 136 (83%) in the CFT plus biofeedback group). 161 (33%) participants declined consent for their Medicare and Pharmaceutical Benefits Scheme data to be extracted. The median number of consultations was seven (IQR 4–8) in both CFT groups. At the 13-week timepoint, 134 (82%) participants in the usual care group responded to a question about their care-seeking behavior over the previous 3 months, with only 51 (38%) having sought care for their low back pain from a health-care practitioner. Their median number of consultations was three (IQR 2–7; range 1–22). This information is important when interpreting the effect size, since improvement in the usual care group was negligible. CFT only (mean difference –4.6 [95% CI –5·9 to –3·4]) and CFT plus biofeedback (–4·6 [–5·8 to –3·3]) treatments were both more effective than usual care, corresponding to large effect sizes (standardized mean difference 0·90 [–1·11 to –0·68] for CFT only and –0·87 [–1·08 to –0·66] for CFT plus biofeedback). These differences were maintained at 52 weeks. CFT groups received a booster session at 26 weeks. Secondary outcomes—physical function, pain intensity, pain self-efficacy, catastrophizing, and fear of movement—reflected the result of the primary outcome. For pain intensity (average of the past 14 days; 0–10 scale) the mean difference between CFT only and usual care was –1·6 (95% CI –2·1 to –1·1) and between CFT plus biofeedback and usual care was –1·6 (–2·1 to –1·2). The difference between the CFT only and CFT plus biofeedback groups was not statistically significant (mean difference 0·0 [–0·5 to 0·5]). Furthermore, CFT only and CFT plus biofeedback were more cost-effective than usual care for quality-adjusted life-years, and much less costly in terms of societal costs (direct and indirect costs and productivity losses; AUS–$5276 [–10529 to –24] for CFT only and –$8211 [–12923 to –3500] for CFT plus biofeedback). The strengths of the trial are that this was the largest clinical trial investigating the clinical

effectiveness and efficiency of CFT. The study was done in multiple primary care clinics and the treatment was delivered by extensively trained physiotherapists. Notably, the risk of attrition bias regarding the primary outcome was much lower than in previous trials of CFT.3,4 In one extreme, efficacy is investigated in clear explanatory randomized trials to describe the expected effects under ideal study conditions. In the opposite extreme, effectiveness is investigated in observational, pragmatic, controlled trials to describe the observed effects under real-world conditions. Considering that RESTORE2 seems to be somewhere between investigating efficacy and effectiveness and that the efficacy of CFT versus placebo is still unknown, some limitations are worth discussing. The usual care group received minimal treatment. Performance bias might explain at least partly the large effect size of CFT groups compared with the usual care group because the CFT groups received much more attention and care. Furthermore, participants were told that the trial compared usual care with two evidence-based interventions and were aware of their group allocation. This unmasking could have negatively influenced the expectations of participants in the usual care group. Also, the absence of a CFT group without movement sensors raised some questions: would CFT be even better without having a movement sensor attached with tape to the participant's lumbar spine? Could this movement sensor be a source of performance bias and placebo effect and partly explain the results? That the biofeedback device was no more effective than the placebo device is good news for low-income and middle-income countries where health-care resources might be scarce. Our research group has been involved with some finished and ongoing randomized controlled trials comparing CFT with manual therapy and exercise.5–7 To our knowledge, the first placebo-controlled trial addressing the efficacy of CFT is being done in Brazil.8 If the efficacy of CFT versus placebo is established, future studies should focus on investigating whether CFT is effective versus usual care in different contexts of health-care systems, not only in high-income countries but also in low-income and middle-income countries. Real-world, observational, pragmatic, controlled trials might be an option for implementing CFT in a scenario without randomization, so that the decision between CFT or usual care depends on individual preferences and results of shared decision making.

The slow de-implementation of non-evidence-based treatments in low back pain hospital care—Trends in treatments using Dutch hospital register data from 1991 to 2018.

Pieter Coenen, Astrid de Wind, Peter van de Ven, Marianne de Maaker-Berkhof, Bart Koes, Rachelle Buchbinder, Jan Hartvigsen, Johannes (Han) R. Anema
European Journal of Pain November 01, 2022
https://doi.org/10.1002/ejp.2052

Abstract:

Background: Low back pain (LBP) is the leading cause of disability worldwide and has an excessive societal burden. Accumulating evidence has shown that some medical approaches such as imaging in absence of clear indications, medication and some invasive treatments may contribute to the problem rather than alleviating it.

Objectives: To determine the extent of de-implementation of non-evidence-based hospital treatments for LBP care in the Netherlands in the last three decades.
Methods: Using a register-based population-level observational study with Dutch hospital data, providing a nearly complete coverage of hospital admissions in the Netherlands in 1991–2018, we assessed five frequently applied non-evidence-based hospital treatments for LBP. Time trends in treatment use (absolute and per 100,000 inhabitants) were plotted and analyzed using Poisson regression.
Results: The use of bed rest for non-specific LBP and hernia nuclei purpose, and discectomy for spinal stenosis decreased 91%, 81% and 86% since the availability of evidence/guidelines, respectively. De-implementation, beyond 84%, was reached after 18 and 17 years for bed rest for non-specific LBP and discectomy respectively, while it was not reached after 28 years for bed rest for hernia nuclei purpose. For spinal fusion and invasive pain treatment, there was an initial increase followed by a reduction. Overall, these treatments reduced by 85% and 75%, respectively.
Conclusions: In the Netherlands, de-implementation of five non-recommended hospital LBP treatments, if at all, took several decades. Although de-implementation was substantial, slow de-implementation has likely resulted in considerable waste of resources and avoidable harm to many patients in Dutch hospitals.
Significance: Medically intensive approaches to low-back pain care contribute to the high societal burden of this disease. There have been calls to avoid such care. Using Dutch hospital data, we showed that de-implementation of five non-recommended hospital low-back pain treatments, if at all, took several decades (i.e., ≥17 years) after availability of evidence and guidelines. Slow de-implementation has likely resulted in considerable waste of resources and avoidable harm to hospital patients; better ways for de-implementation of non-evidence-based care are needed.

Effects of Running on the Development of Knee Osteoarthritis
An Updated Systematic Review at Short-Term Follow-up

Jaydeep Dhillon, BS, Matthew J. Kraeutler, MD, John W. Belk, BA, Anthony J. Scillia, MD, Eric C. McCarty, MD, Jeremy K. Ansah-Twum, BS, Patrick C. McCulloch, MD
The Orthopedic Journal of Sports Medicine March 01, 2023
https://doi.org/10.1177/23259671231152900

Abstract:

Background: Some studies have suggested that running increases the risk of knee osteoarthritis (OA), while others believe it serves a protective function.
Purpose: To perform an updated systematic review of the literature to determine the effects of running on the development of knee OA.
Study Design: Systematic review; Level of evidence, 4.
Methods: A systematic review was performed by searching the PubMed, Cochrane Library, and Embase databases to identify studies evaluating the effect of cumulative running on the development of knee OA or chondral damage based on imaging and/or patient-reported outcomes (PROs). The search terms used were “knee AND osteoarthritis AND (run OR running OR runner).” Patients were evaluated based on

plain radiographs, magnetic resonance imaging (MRI), and PROs (presence of knee pain, Health Assessment Questionnaire-Disability Index, and the Knee injury and Osteoarthritis Outcome Score).
Results: Seventeen studies (6 level 2 studies, 9 level 3 studies, and 2 level 4 studies), with 7194 runners and 6947 nonrunners, met the inclusion criteria. The mean follow-up time was 55.8 months in the runner group and 99.7 months in the nonrunner group. The mean age was 56.2 years in the runner group and 61.6 years in the nonrunner group. The overall percentage of men was 58.5%. There was a significantly higher prevalence of knee pain in the nonrunner group ($P < .0001$). Although 1 study found a significantly higher prevalence of osteophytes in the tibiofemoral (TF) and patellofemoral (PF) joints within the runner group, multiple studies found no significant differences in the prevalence of radiographic knee OA (based on TF/PF joint-space narrowing or Kellgren-Lawrence grade) or cartilage thickness on MRI between runners and nonrunners ($P> .05$). One study found a significantly higher risk of knee OA progressing to total knee replacement among nonrunners (4.6% vs 2.6%; $P= .014$).
Conclusion: In the short term, running is not associated with worsening PROs or radiological signs of knee OA and may be protective against generalized knee pain.

The global epidemic of low back pain

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Abstract:

The global epidemic of low back pain is escalating. A staggering 619 million people worldwide suffered from low back pain in 2020 (nearly 10% of the world's population), and by 2050, that number is expected to reach 843 million. With a paucity of proven effective treatments, continued reliance on low-value health care, and disproportionate impact on disadvantaged and culturally diverse populations, what is needed to turn the tide on low back pain?
The latest figures on low back pain prevalence, which come from the Global Burden of Disease (GBD) 2021 study, show that the most dramatic growth in prevalence will be in Asia and Africa, where social support systems and health-care systems are often under-resourced and overburdened. And as with many chronic conditions, the burden falls most heavily on socioeconomically disadvantaged populations.
What's more, these new numbers are likely to be underestimated, given that the GBD 2021 data do not account for the impact of COVID-19. Indeed, both the prevalence and intensity of low back pain increased during the pandemic, according to a recent meta-analysis of 163 studies, due in part to increased inactivity resulting from lockdowns and physical distancing measures, as well as the worsened ergonomics of working from home. And limited access to health care meant worsening pain for many with existing lower back pain.
The societal and economic burden of low back pain is substantial—in the UK, low back pain costs the National Health Service nearly £5 billion annually from general practitioner appointments alone. In the USA, the price tag for low back and neck pain was US$134 billion in 2016. Low back pain—the prevalence of which is highest in working-age people—also increases absenteeism, decreases productivity, and contributes to early retirement. In Brazil, for example, low back pain accounted for

100 days absent from work per person per year between 2012 and 2016, with productivity losses accounting for nearly 80% of the country's annual cost of low back pain (US$2.2 billion). There are also reciprocal effects on mental health—chronic low back pain is associated with increased depression, and depression is linked to increased disability and worse recovery in individuals with low back pain.

Despite being the leading cause of disability worldwide, low back pain and other musculoskeletal conditions have not featured prominently on the global health agenda. There is no specific mention of these conditions in the WHO non-communicable diseases (NCD) agenda nor the NCD 2030 Countdown, and the US National Institute of Health (NIH) has slashed its funding budget for back pain by more than half, from US$170 in 2019 to US$69 million in 2023. In stark contrast, the 2023 NIH budget for arthritis, which is increasing in prevalence but decreasing as a cause of disability and mortality, is US$323 million. Low back pain—and musculoskeletal conditions more broadly—need to be prioritized at the global level, with governments, health-care systems, and policy makers working collaboratively to implement solutions.

Solutions should involve integration of strategies to mitigate low back pain in the workplace, along with access to rehabilitation services, which will help to minimize absenteeism. To this end, in 2017, WHO launched the Rehabilitation 2030 initiative, which aims to strengthen rehabilitation services worldwide, noting that this is a fundamental but under resourced element of disease management that remains unattainable for many patients. Specific training of health-care practitioners in the treatment of patients with low back pain could also be a positive step forward. In the UK, the introduction of first contact practitioners—advanced practitioners who specialize in musculoskeletal conditions—has resulted in fewer referrals to secondary care, fewer requests for imaging, and improved conversion rates to surgery.

A major challenge in minimizing the burden of low back pain will be to facilitate identification of and access to effective non-pharmacological interventions in order to move away from harmful low-value health-care options, such as opioids. The NIH's Back Pain Consortium Research program was launched in 2019 to address the health-care gap in low back pain, as part of a broader initiative to address the opioid epidemic in the USA. The program aims to improve the phenotyping and diagnosis of low back pain and promote research into new treatments.

Although progress has been made, turning the tide on low back pain in a meaningful way will require establishing and amplifying it as a priority on the global health agenda. The time to do so is now.

Gluteal Muscle Forces during Hip-Focused Injury Prevention and Rehabilitation Exercises

Tyler J Collings, Matthew N Bourne, Rod S Barrett, Evy Meinders, BASíLIO A M GONçALVES, Anthony J Shield, Laura E Diamond
Medicine science in Sports and Exercise July 2022.
DOI: 10.1249/MSS.0000000000003091

Abstract:

Purpose: This study aimed to compare and rank gluteal muscle forces in eight hip-focused exercises performed with and without external resistance and describe the underlying fiber lengths, velocities, and muscle activations.

Methods: Motion capture, ground reaction forces, and electromyography (EMG) were used as input to an EMG-informed neuromusculoskeletal model to estimate gluteus maximus, Medius, and minimums muscle forces. Participants were 14 female footballers (18-32 yr. old) with at least 3 months of lower limb strength training experience. Each participant performed eight hip-focused exercises (single-leg squat, split squat, single-leg Romanian deadlift [RDL], single-leg hip thrust, banded sidestep, hip hike, side plank, and side-lying leg raise) with and without 12 repetition maximum (RM) resistance. For each muscle, exercises were ranked by peak muscle force, and k-means clustering separated exercises into four tiers.
Results: The tier 1 exercises for gluteus maximus were loaded split squat (95% confidence interval [CI] = 495-688 N), loaded single-leg RDL (95% CI = 500-655 N), and loaded single-leg hip thrust (95% CI = 505-640 N). The tier 1 exercises for gluteus Medius were body weight side plank (95% CI = 338-483 N), loaded single-leg squat (95% CI = 278-422 N), and loaded single-leg RDL (95% CI = 283-405 N). The tier 1 exercises for gluteus minimums were loaded single-leg RDL (95% CI = 267-389 N) and body weight side plank (95% CI = 272-382 N). Peak gluteal muscle forces increased by 28-150 N when exercises were performed with 12RM external resistance compared with body weight only. Peak muscle force coincided with maximum fiber length for most exercises.
Conclusions: Gluteal muscle forces were exercise specific, and peak muscle forces increased by varying amounts when adding a 12RM external resistance. These findings may inform exercise selection by facilitating the targeting of individual gluteal muscles and optimization of mechanical loads to match performance, injury prevention, or rehabilitation training goals.

Intradiscal pharmacokinetics of oral antibiotics to treat Chronic Lower Back Pain

Lloyd G. Czaplewski, Marcus Zeitlinger and Joseph F. Standing
Nature May 10,1023
https://doi.org/10.1038/s44259-023-00002-7

Abstract:

Oral amoxicillin and amoxicillin, for extended dose regimens of up to 100 days, have shown benefit in the treatment of Chronic Lower Back Pain (CLBP) associated with vertebral bone oedema, known as Medic type 1 changes, which may be caused by a bacterial infection, but the magnitude of clinical improvement has been variable. The objectives of this review were to use sparse data from the literature to estimate the exposure of amoxicillin in the intervertebral disc, and to determine whether adequate antimicrobial exposure may have been achieved. Exposure to amoxicillin in herniated disc tissue was approximately 6.5% of the serum concentration. Dosing of oral amoxicillin, Q12h, at doses of up to 1,000 mg is unlikely to lead to effective exposure in disc tissue. Mean exposure to 500 mg or 750 mg of oral Q8h amoxicillin may reach the efficacy target for ~50% of Cut bacterium acnes strains, but not for 90% of C. acnes strains. Mean exposure to 1,000 mg of oral amoxicillin Q8h may reach the target exposure for 90% of strains. Oral amoxicillin CLBP studies may all be underdosed. More than 1400 patients with CLBP and Medic type 1 changes have been exposed to oral amoxicillin for up to 100 days, with no apparent evaluation of

systemic or intradiscal pharmacokinetics. Additional clinical evaluations of amoxicillin and alternative antibiotics, their dose regimens, and intradiscal pharmacokinetics are warranted to optimize treatment for this indication. Expertise in antibacterial pharmacokinetics and pharmacodynamics should be included in the design and execution of future studies.

Improving the Effectiveness of Exercise Therapy for Adults with Knee Osteoarthritis: A Pragmatic Randomized Controlled Trial (BEEP trial)

Nadine E Foster DPhil , Elaine Nicholls PhD , Melanie A Holden PhD , Emma L Healey PhD , Elaine M Hay MD , The BEEP trial team
Archives of Rehabilitation Research and Clinical Translation May 06 2023
https://doi.org/10.1016/j.arrct.2023.100266

Abstract:

Objective: To investigate whether knee osteoarthritis (OA) related pain and function can be improved by offering enhanced physical therapist-led exercise interventions.
Design: Three-arm prospectively designed pragmatic randomized controlled trial.
Setting: General practices and National Health Service physical therapy services in England.
Participants: 514 adults (252 men, 262 women) aged ≥45 years with a clinical diagnosis of knee osteoarthritis (N=514). Mean Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores at baseline were 8.4 for pain and 28.1 for function.
Interventions: Participants were individually randomized (1:1:1 allocation) to usual physical therapy care (UC control: up to 4 sessions of advice and exercise over 12 weeks), individually tailored exercise (ITE: individualized, supervised, and progressed lower limb exercises, 6-8 sessions over 12 weeks), or targeted exercise adherence (TEA: transitioning from lower limb exercise to general physical activity, 8-10 contacts over 6 months).
Main Outcome Measures: Primary outcomes were pain and physical function measured by the WOMAC at 6 months. Secondary outcomes were measured at 3, 6, 9, 18, and 36 months.
Results: Participants receiving UC, ITE, and TEA all experienced moderate improvement in pain and function. There were no significant differences between groups at 6 months (adjusted mean differences (95% confidence intervals): pain UC vs ITE, -0.3 (-1.0 to 0.4), UC vs TEA, -0.3 (-1.0 to 0.4); function UC vs ITE, 0.5 (-1.9 to 2.9), UC vs TEA, -0.9 (-3.3 to 1.5)), or any other time-point.
Conclusions: Patients receiving UC experienced moderate improvement in pain and function; however, ITE and TEA did not lead to superior outcomes. Other strategies for patients with knee osteoarthritis to enhance the benefits of exercise-based physical therapy are needed.

Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021

The Lancet June 2023
https://doi.org/10.1016/S2665-9913(23)00098-X

Summary

Background: Low back pain is highly prevalent, and the main cause of years lived with disability (YLDs). We present the most up-to-date global, regional, and national data on prevalence and YLDs for low back pain from the Global Burden of Diseases, Injuries, and Risk Factors Study 2021.
Methods: Population-based studies from 1980 to 2019 identified in a systematic review, international surveys, US medical claims data, and dataset contributions by collaborators were used to estimate the prevalence and YLDs for low back pain from 1990 to 2020, for 204 countries and territories. Low back pain was defined as pain between the 12th ribs and the gluteal folds that lasted a day or more; input data using alternative definitions were adjusted in a network meta-regression analysis. Nested Bayesian meta-regression models were used to estimate prevalence and YLDs by age, sex, year, and location. Prevalence was projected to 2050 by running a regression on prevalence rates using Socio-demographic Index as a predictor, then multiplying them by projected population estimates.
Findings: In 2020, low back pain affected 619 million (95% uncertainty interval 554–694) people globally, with a projection of 843 million (759–933) prevalent cases by 2050. In 2020, the global age-standardized rate of YLDs was 832 per 100 000 (578–1070). Between 1990 and 2020, age-standardized rates of prevalence and YLDs decreased by 10·4% (10·9–10·0) and 10·5% (11·1–10·0), respectively. A total of 38·8% (28·7–47·0) of YLDs were attributed to occupational factors, smoking, and high BMI.
Interpretation: Low back pain remains the leading cause of YLDs globally, and in 2020, there were more than half a billion prevalent cases of low back pain worldwide. While age-standardized rates have decreased modestly over the past three decades, it is projected that globally in 2050, more than 800 million people will have low back pain. Challenges persist in obtaining primary country-level data on low back pain, and there is an urgent need for more high-quality, primary, country-level data on both prevalence and severity distributions to improve accuracy and monitor change.

Predictors of 1-year Perceived Recovery, Absenteeism, and Expenses due to Low Back Pain in Workers Receiving Mechanical Diagnosis and Therapy: A Prospective Cohort Study

Hiroshi Takasaki
Mechanical Diagnosis and Therapy April 30, 2023
https://doi.org/10.3390/healthcare11091293

Abstract:

This multicenter prospective cohort study aimed to preliminarily explore statistically relevant modifiable and predetermined factors for 1-year perceived recovery, absenteeism, and personal expenses in workers who received Mechanical Diagnosis and Therapy (MDT) for low back pain (LBP). Three stepwise multiple regression models were explored with 42 independent variables, including (1) socio-demographic factors; (2) risk stratification; (3) pain-related variables, psychological variables, and behavioral variables at baseline and changes after a month; (4) therapeutic alliance and exercise adherence at 1-month follow-up; and (5) MDT classification and therapist levels. Data from 58 participants were analyzed, after which a model with a medium effect size was developed for 1-year perceived recovery only. Consequently, patients with derangement syndrome were expected to have improved 1-year perceived recovery, with expected predetermined prognostic factors including shorter symptom duration, self-management skills to lead a healthy life, and less pain catastrophizing at baseline. A stronger therapeutic alliance between patient and therapist during the 1-month MDT intervention was identified as an expected modifiable prognostic factor. It may be difficult to accurately predict the annual absenteeism and personal expenses due to LBP given the weak to low effect sizes of the developed models.

cognitive functional therapy with or without movement sensor biofeedback versus usual care for chronic, disabling low back pain (RESTORE): a randomized, controlled, three-arm, parallel group, phase 3, clinical trial.

Peter Kent, Terry Haines, Peter O'Sullivan, Anne Smith, Amity Campbell, Robert Schutze, Stephanie Attwell, J P Caneiro, Robert Laird, Kieran O'Sullivan, Alison McGregor, Jan Hartvigsen, Den-Ching A Lee, Alistair Vickery, Mark Hancock
The Lancet May 02, 2023
https://doi.org/10.1016/S0140-6736(23)00441-5

Summary:

Background: Low back pain is the leading cause of years lived with disability globally, but most interventions have only short-lasting, small to moderate effects. Cognitive functional therapy (CFT) is an individualized approach that targets unhelpful pain-related cognitions, emotions, and behaviors that contribute to pain and disability. Movement sensor biofeedback might enhance treatment effects. We aimed

to compare the effectiveness and economic efficiency of CFT, delivered with or without movement sensor biofeedback, with usual care for patients with chronic, disabling low back pain.
Methods: RESTORE was a randomized, controlled, three-arm, parallel group, phase 3 trial, done in 20 primary care physiotherapy clinics in Australia. We recruited adults (aged ≥18 years) with low back pain lasting more than 3 months with at least moderate pain-related physical activity limitation. Exclusion criteria were serious spinal pathology (e.g., fracture, infection, or cancer), any medical condition that prevented being physically active, being pregnant or having given birth within the previous 3 months, inadequate English literacy for the study's questionnaires and instructions, a skin allergy to hypoallergenic tape adhesives, surgery scheduled within 3 months, or an unwillingness to travel to trial sites. Participants were randomly assigned (1:1:1) via a centralized adaptive schedule to usual care, CFT only, or CFT plus biofeedback. The primary clinical outcome was activity limitation at 13 weeks, self-reported by participants using the 24-point Roland Morris Disability Questionnaire. The primary economic outcome was qualityadjusted life-years (QALYs). Participants in both interventions received up to seven treatment sessions over 12 weeks plus a booster session at 26 weeks. Physiotherapists and patients were not masked. This trial is registered with the Australian New Zealand Clinical Trials Registry, ACTRN12618001396213.
Findings: Between Oct 23, 2018, and Aug 3, 2020, we assessed 1011 patients for eligibility. After excluding 519 (51·3%) ineligible patients, we randomly assigned 492 (48·7%) participants; 164 (33%) to CFT only, 163 (33%) to CFT plus biofeedback, and 165 (34%) to usual care. Both interventions were more effective than usual care (CFT only mean difference –4·6 [95% CI –5·9 to –3·4] and CFT plus biofeedback mean difference –4·6 [–5·8 to –3·3]) for activity limitation at 13 weeks (primary endpoint). Effect sizes were similar at 52 weeks. Both interventions were also more effective than usual care for QALYs, and much less costly in terms of societal costs (direct and indirect costs and productivity losses; –AU$5276 [–10 529 to –24) and –8211 (–12 923 to –3500).
Interpretation: CFT can produce large and sustained improvements for people with chronic disabling low back pain at considerably lower societal cost than that of usual care.

Strategies to facilitate and tools to measure non-specific low back pain patients 'adherence to physiotherapy - A two-stage systematic review.

Anna Alt, H. Luomajoki, K. Lüdtke
Journal of Bodywork & Movement Therapies April 28, 2023
https://doi.org/10.1016/j.jbmt.2023.04.060

Abstract:

Background: Sustainable management for non-specific low back pain relies on adherence. This requires effective strategies to facilitate but also tools to measure adherence to physiotherapy.

Objective: This two-stage systematic review aims to identify (1) tools to measure non-specific back pain patients' adherence to physiotherapy and (2) the most effective strategy to facilitate patients' adherence to physiotherapy.
Method: PubMed, Cochrane, PEDro, and Web of Science were searched for English language studies measuring adherence in adults with low back pain. Following PRISMA recommendations, scoping review methods were used to identify measurement tools (stage 1). The effectiveness of interventions (stage 2) followed a predefined systematic search strategy. Two independent reviewers selected eligible studies (software Rayyan), analyzed these for risk of bias using the Downs and Black checklist. Data relevant to assess adherence were collected in a predesigned data extraction table. Results were heterogeneous and hence summarized narratively.
Results: Twenty-one studies were included for stage 1 and 16 for stage 2. Identified were 6 different tools to measure adherence. The most used tool was an exercise diary; the most common more multidimensional tool was the Sports Injury Rehabilitation Adherence Scale. Most included studies were not designed to improve or measure adherence but used adherence as a secondary outcome for new exercise programs. The most promising strategies for facilitating adherence were based on cognitive behavioral principles.
Conclusion: Future studies should focus on the development of multidimensional strategies to facilitate adherence to physiotherapy and appropriate tools to measure all aspects of adherence.

Do visual pain trajectories reflect the actual course of low back pain? A longitudinal cohort study.

C.G. Nim, W. Vach, A. Downie, A. Kongsted
The Journal of Pain April 07, 2023
https://doi.org/10.1016/j.jpain.2023.04.004

Abstract:

Different trajectories of low back pain (LBP) have been identified prospectively using repeated measures. For these trajectories to inform clinical practice, they must be available in the clinical consultation. Therefore, identified LBP trajectories have been translated into visual pain trajectories (VPTs) that allow people with LBP, at the time of consult, to reflect upon their pain experience and identify the VPT that best categorizes their pain course. We have limited knowledge regarding the extent to which a chosen VPT reflects the prospectively experienced trajectory. Thus, we explored the distribution of pain intensity and pain pattern characteristics (from prospective pain trajectory data) within the retrospectively chosen VPT classes. We enrolled patients with LBP from Danish chiropractic practice. Using SMS, participants (n = 719) scored their pain weekly on an 11-point numerical rating scale for 52 weeks. At week 52, participants identified 1 of 8 VPTs that reflected their perceived back pain trajectory during the preceding year. We found that the chosen VPTs reflected pain intensity, but that pain patterns (episodic, fluctuating, and persistent) were not systematically recognized, and the experienced course varied substantially amongst participants within the same VPT. The VPTs are related to some aspects of the experienced LBP course but are not a proxy for the SMS-measured trajectories.

Reasons for apparent mismatches between the experienced course of LBP and VPT recall warrant further investigation.
Perspective: Self-reported back pain trajectories reflected pain intensities obtained through weekly SMS tracking over a year, but participants' recall did not reflect the pain patterns (episodes and fluctuations) discovered prospectively. Clinicians can use self-reported pain trajectories to facilitate a dialog about pain experience, but not as a proxy for prospective measures.

Mechanical diagnosis and therapy in musculoskeletal pain of individuals with spinal cord injury

Poliana Grasser, Frederico Ribeiro Neto, João H. C. L. Veloso, Rodrigo R. Gomes Costa & Jefferson Rodrigues Dornele
The Journal of Spinal Cord Medicine April 28, 2023
https://doi.org/10.1080/10790268.2023.2197818

Abstract:

Context/Objective: Musculoskeletal pain (MSKP) has high prevalence in individuals with spinal cord injury (SCI). Mechanical Diagnosis and Therapy (MDT) is a method focused on identifying the pain source in the musculoskeletal system and presents good results in pain relief in people without neurological impairment. However, no studies have investigated the use of MDT in SCI population. The objective was to evaluate the applicability and outcomes of MDT treatment in pain relief and independence improvement in daily activities of individuals with SCI presenting MSKP**.**
Design: Single-arm trial.
Setting: Rehabilitation Hospital
Participants: Twenty-four individuals with SCI who presented MSKP. Intervention: MDT-certified physical therapist conducted assessments and treatments of pain according to the MDT approach.
Outcomes Measures: Numeric rating scale (NRS) was used to measure pain and Pain Disability Index (PDI) and Patient-Specific Functional Scale (PSFS) to evaluate daily activities.
Results: Significant median decreases were found for NRS (from 7 to 2) and PDI (from 27 to 8) after MDT, whereas PSFS score presented a significant mean increase (from 3.2–7.7). The average decrease in pain after MDT treatment was 70.9% (5.36 on the NRS).
Conclusion: MDT can reduce pain and enhance independence in daily activities in individuals with SCI and MSKP

The McKenzie Method Is an Effective Rehabilitation Paradigm for Treating Adults with Moderate-to-Severe Neck Pain: A Systematic Review with Meta-Analysis

Anthony N. Baumann, Kevin Orellana, Leah Landis, Marc Crawford, Caleb J. Oleson, Hudson Rogers, Deven P. Curtis, Keith D. Baldwin
Cureus May 19, 2023
DOI: 10.7759/cureus.39218

Abstract:

Neck pain is a common musculoskeletal condition frequently managed with numerous conservative interventions. The McKenzie method of mechanical diagnosis and therapy (MMDT) is a form of physical therapy evaluation and treatment that aims to improve pain and disability in patients with musculoskeletal pain, including neck pain. To date, no systematic review with meta-analysis has examined the use of the McKenzie MMDT for neck pain. This study aimed to examine the effectiveness of the McKenzie MMDT in adult patients with neck pain. A systematic review and meta-analysis were performed using PubMed, ScienceDirect, MEDLINE, CINAHL, Web of Science, and Google Scholar. Full search terms were “McKenzie method” OR “McKenzie approach” OR “McKenzie treatment” AND “neck pain.” Inclusion criteria were the use of the McKenzie MMDT, level I randomized control trials (RCTs), adults, and outcomes of pain (0-10 scale) and disability (neck disability index). A total of 11 RCTs met the final selection criteria from 1,955 articles on initial search with 289 patients receiving the McKenzie MMDT out of 677 total patients. For meta-analysis, there was a clinically insignificant but statistically significant improvement in pain (1.14/10 points) in patients receiving the McKenzie MMDT versus control interventions ($p<0.02$). There was no significant improvement in the neck disability index score between the McKenzie MMDT versus control interventions ($p=0.19$). For severity of pain, there was a clinically and statistically significant improvement in moderate or severe pain (2.06/10 points; $p<0.01$), but not in mild-to-moderate pain ($p=0.84$) when comparing the McKenzie MMDT to control interventions. Overall, the McKenzie MMDT provides very small but statistically significant improvements in neck pain of all severity compared to control interventions. However, the McKenzie MMDT does provide clinically and statistically significant pain improvement in moderate-to-severe neck pain. Use of the McKenzie MMDT did not provide any significant improvement in disability compared to control interventions. This study is the first systematic review with meta-analysis on the effectiveness of the McKenzie MMDT for adult patients with neck pain.

The mechanical loading of the spine in physical activities

Robin Schäfer, Katharina Trompeter, Daniela Fett, Kai Heinrich, Johannes Funken, Stefen Willwacher, Gert-Peter Brüggemann, Petra Platen
European Spine Journal April 19, 2023
https://doi.org/10.1007/s00586-023-07733-1

Abstract:

Purpose: To summarize the mechanical loading of the spine in different activities of daily living and sports.
Methods: Since the direct measurement is not feasible in sports activities, a mathematical model was applied to quantify spinal loading of more than 600 physical tasks in more than 200 athletes from several sports disciplines. The outcome is compression and torque (normalized to body weight/mass) at L4/L5.
Results: The data demonstrate high compressive forces on the lumbar spine in sport-related activities, which are much higher than forces reported in normal daily activities and work tasks. Especially ballistic jumping and landing skills yield high estimated compression at L4/L5 of more than ten times body weight. Jumping, landing, heavy lifting and weight training in sports demonstrate compression forces significantly higher than guideline recommendations for working tasks.
Conclusion: These results may help to identify acute and long-term risks of low back pain and, thus, may guide the development of preventive interventions for low back pain or injury in athletes.

Evaluation of Fix Spine and McKenzie Exercises in Comparison with Postural Text Reminders on Neck Pain among Office Workers: A Pilot Study

Naba Yasmeen. M.M.Sc.(PT)
International Journal of Physiotherapy and Research April 2023
https://dx.doi.org/10.16965/ijpr.2023.112

Abstract:

Background: Neck pain is a public health issue and the world's fourth-biggest cause of disability. Office workers are more affected by poor posture and different weight loads on the neck leading to the development of neck pain. Fix a Spine is a wearable device allowing proper sitting or standing posture when using the computer. McKenzie exercises are inter alia used for decreasing neck pain, there are no studies on the combination of Fix a Spine and McKenzie exercises.
Objective: to evaluate the change in perceived neck pain before and after the combination of training with Fix a Spine and performing McKenzie exercises among office workers in comparison to postural text reminders. Materials and methodology: a pre-post-interventional pilot study was carried out in Southern Sweden with 39 participants. The intervention group received training with Fix a Spine and McKenzie exercises and the control group received postural text reminders for the duration of four weeks. The participants performed five days a week during working hours. The

data was collected by Neck Pain and Disability Scale. Paired samples t-test and independent t-test were used for analysis.
Results: a total of 39 participants (intervention group (n = 25) and control group (n = 14)) were included in the study. The intervention group showed a statistically significant difference in neck pain (p = 0.000) and in the control group, there was no significant difference in neck pain (p = 0.57). There was a significant difference in post-total NPDS scores across the groups (p = 0.002). The magnitude of the mean differences was very large (mean difference = -26.21, 95 % confidence interval: -42.12 to -10.3; Glass 'delta = 1.23).
Conclusion: There was a significant decrease in perceived neck pain measured before and after an intervention by a combination of training with Fix a Spine and performing McKenzie exercises among office workers in comparison to postural text reminders. Further research is needed involving control groups (Fix a Spine /McKenzie exercises).

Total daily energy expenditure has declined over the past three decades due to declining basal expenditure, not reduced activity expenditure.

John R. Speakman, Jasper M. A. de Jong, Srishti Sinha, Klaas R. Westerterp, Yosuke Yamada, Hiroyuki Sagayama, Philip N. Ainslie, Liam J. Anderson, Lenore Arab, Kweku Bedu-Addo, Stephane Blanc, Alberto G. Bonomi, et.al.
Nature Metabolism April 26.2023
https://doi.org/10.1038/s42255-023-00782-2

Abstract:

Obesity is caused by a prolonged positive energy balance1,2. Whether reduced energy expenditure stemming from reduced activity levels contributes is debated3,4. Here we show that in both sexes, total energy expenditure (TEE) adjusted for body composition and age declined since the late 1980s, while adjusted activity energy expenditure increased over time. We use the International Atomic Energy Agency Doubly Labelled Water database on energy expenditure of adults in the United States and Europe (n = 4,799) to explore patterns in total (TEE: n = 4,799), basal (BEE: n = 1,432) and physical activity energy expenditure (n = 1,432) over time. In males, adjusted BEE decreased significantly, but in females this did not reach significance. A larger dataset of basal metabolic rate (equivalent to BEE) measurements of 9,912 adults across 163 studies spanning 100 years replicates the decline in BEE in both sexes. We conclude that increasing obesity in the United States/Europe has probably not been fuelled by reduced physical activity leading to lowered TEE. We identify here a decline in adjusted BEE as a previously unrecognized factor.

The importance of using placebo controls in nonpharmacological randomized trials

Karolina A. Wartolowska, David Hohenschurz-Schmidt, Lene Vase, Jeffrey K. Aronson

The Journal of the international Association of Pain May 2023
http://dx.doi.org/10.1097/j.pain.0000000000002839

Abstract:

1. Introduction: Novel pharmacological compounds must undergo a series of highly regulated steps and have their efficacy demonstrated under strict conditions of placebo-controlled trials before being approved for clinical use.17 This is often not the case for treatments that do not involve a pharmacological element, such as surgery, physiotherapy, or psychological therapy. Despite the recognized need for evaluation,31 there are currently no formal requirements to test the efficacy of nonpharmacological medical procedures. Failing to recognize that even large positive or negative effects may be caused by biases, rather than the medical properties of a treatment, may have serious consequences, as ineffective interventions may continue to be used, e.g., spinal fusion for nonspecific back pain.47 Alternatively, effective treatments may be abandoned because negative effects are misattributed to the treatment.26 While some nonpharmacological treatments (Table 1), such as physiotherapy, are generally safe, and if they are not effective, the only harm may be a delay in providing effective therapy, others, such as surgery, are inherently associated with risks. If ineffective surgery continues to be used, not only does it waste time and resources, depriving patients of better treatment, but it also exposes patients to the risks associated with the procedure itself or anesthesia, without any clinical benefits to justify them. In this topical review, we argue that not testing the efficacy of nonpharmacological procedures is problematic and should be addressed. We also outline possible steps to promote high-quality nonpharmacological efficacy trials.

2. Improvement and bias: Not all treatment effects are due to the clinical efficacy of the treatment; some arise from factors unrelated to the tested treatment.21 Some effects may be due to random error, ie, the play of chance, or to systematic error, also known as bias. Bias refers to any systematic distortion causing erroneous overestimation or underestimation of the probable size of an effect or association3 (Tables 1 and 2). Biases in medicine are common, e.g., those who receive a particular type of treatment may differ from those who receive another treatment or no treatment at all. The only way to minimize random error is to study many patients, ie, to have a sufficiently large sample size. However, strategies to minimize systematic errors depend on the type of bias, which is why different types of clinical trials are used.

3. Elements of trial design: Well-designed clinical trials provide reliable and unbiased evidence of the efficacy of medical treatments. Studies aiming to demonstrate both the benefits and harms of treatments under highly controlled conditions are called efficacy trials.38 Their focus is on internal validity, achieved through minimizing bias and standardizing procedures to ensure that the treatment is implemented as intended.25 It is important to note that although well-designed trials34 can demonstrate both benefits and harms,40 trials are usually not powered to test harms.

Back to the sport of throwing after an injury and overload on the upper extremity
A criteria-based approach using the example of an injury to the ulnar collateral ligament.

Matthias Keller, Andreas Lenich, Tim Saier, Eduard Kurz
Die Orthopädie 13. März 2023
https://doi.org/10.1007/s00132-023-04375-5

Background: There are no uniform procedures for rehabilitation and follow-up treatment after injuries and operations on the upper extremities. Accordingly, only a few approaches have been described for the follow-up treatment of instabilities in the elbow.
Purpose: The authors show how the rehabilitation before sport-specific training after a rupture of the collateral ulnar ligament in a handball player can be objectified and controlled using the results of functional tests.
Material and Methods: The follow-up treatment of a semi-professional handball player (20 years) after a rupture of the collateral ulnar ligament was objectified and controlled using the return-to-activity algorithm. In addition to the side comparison, reference values from 14 uninjured handball players could be used for orientation.
Results/Conclusions: The patient was able to fully participate in handball training again after 15 weeks and compete in her first competition after 20 weeks. On the affected side, she achieved a distance of 118% of her own arm's length in the "medial reach" of the Y-Balance test for the upper extremity and 63 valid contacts in the wall-hop test. At the end of the rehabilitation, the values achieved were above the average values of the control group.

Introducing Australia's clinical care standard for low back pain.

Maher CG, Archambeau A, Buchbinder R, French SD, Morphet J, Nicholas MK, O'Sullivan P, Pirotta M, Yelland MJ, Zeller L, Saad N, Marles E, Bhasale AL, Lane C.
ANZ J Surg. 2023 May 26. doi: 10.1111/ans.18517.

Low Back Pain Clinical Care Standard:1 fact sheet for clinicians

Low back pain refers to pain felt in the lower part of the spine (lumbar spine) localized between the twelfth rib and the inferior buttock crease, which is often accompanied by pain in one or both legs.
The Low Back Pain Clinical Care Standard aims to improve the early assessment, management and referral of patients with low back pain, and to improve shared decision making about which tests and treatments are most effective in managing low back pain.
It covers the early management of an acute presentation of low back pain that is new, recurrent or an exacerbation of chronic low back pain. However, it does not describe the ongoing management of chronic low back pain.
Quality statement 1: Initial clinical assessment
The assessment of a patient with a new presentation of low back pain symptoms, with or without leg pain or other neurological symptoms, focuses on screening for specific and/or serious pathology and consideration of psychosocial factors. It

includes a targeted history and physical examination with a focused neurological examination when appropriate. Arrangements are made for follow-up based on an evidence-based low back pain pathway.

Quality statement 2: Psychosocial assessment

Early in each new presentation, a patient with low back pain, with or without leg pain or other neurological symptoms, is screened and assessed for psychosocial factors that may affect their recovery. This includes assessing their understanding of, and concerns about, diagnosis and pain, and the impact of pain on their life. The assessment is repeated at subsequent visits to measure progress.

Quality statement 3: Reserve imaging for suspected serious pathology

Expectations of imaging and its limited role in diagnosing low back pain are discussed with a patient. Early and appropriate referral for imaging occurs when there are signs or symptoms of specific and/or serious pathology. The likelihood and significance of incidental findings are reported and discussed with the patient.

Quality statement 4: Patient education and advice

A patient with low back pain is provided with information about their condition and receives targeted advice to increase their understanding and address their concerns and expectations. The potential benefits, risks and costs of medicines and other treatment options are discussed, and the patient is supported to ask questions and share in decisions about their care.

Quality statement 5: Encourage self-management and physical activity

A patient with low back pain is encouraged to stay active and continue or return to usual activity, including work, as soon as possible. Self-management strategies are discussed, and the patient and clinician develop a plan together that includes practical advice to maximize function, limit the impact of pain and other symptoms on daily life, and address individual needs and preferences.

Quality statement 6: Physical and/or psychological interventions

A patient with low back pain is offered physical and/or psychological interventions based on their clinical and psychosocial assessment findings, with therapy targeted at overcoming identified barriers to recovery.

Quality statement 7: Judicious use of pain medicines

A patient is advised that the goal of pain medicines is to enable physical activity, not to eliminate pain. If a medicine is prescribed, it is in accordance with the current Therapeutic Guidelines, with ongoing review of benefit and clear stopping goals. Avoid anticonvulsants, benzodiazepines and antidepressants, because their risks often outweigh potential benefits and there is evidence of limited effectiveness. Consider opioid analgesics only in carefully selected patients, at the lowest dose for the shortest duration possible.

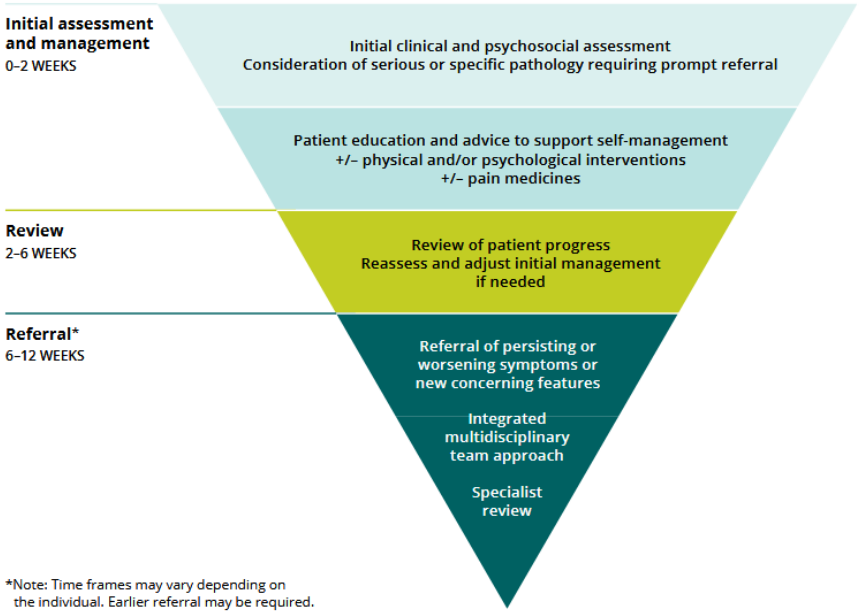
Quality statement 8: Review and referral

A patient with persisting or worsening symptoms, signs or function is reassessed at an early stage to determine the barriers to improvement. Referral for a multidisciplinary approach is considered. Specialist medical or surgical review is indicated for severe or progressive back or leg pain unresponsive to other therapy, progressive neurological deficits, or other signs of serious and/or specific pathology.

Note: Quick guides for general practitioners, emergency departments and physiotherapists are available at https://www.safetyandquality.gov.au/standards/clinical-care-standards/low-back-pain-clinical-care-standard/information-clinicians

About the Low Back Pain Clinical Care Standard

Figure 1: General overview of care – *Low Back Pain Clinical Care Standard*



*Note: Time frames may vary depending on the individual. Earlier referral may be required.