PEDro Newsletter 4 April 2022

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PEDro Physiotherapy Evidence Database

A. PEDro update (4 April 2022)

PEDro contains 54,357 records. In the 4 April 2022 update you will find:

- 41,718 reports of randomised controlled trials (41,104 of these trials have confirmed ratings of methodological quality using the PEDro scale)
- 11,933 reports of systematic reviews, and
- 706 reports of evidence-based clinical practice guidelines.

For latest guidelines, reviews and trials in physiotherapy visit *Evidence in your inbox*.

B. DiTA update (4 April 2022)

DiTA contains 2,339 records. In the 4 April 2022 update you will find:

- 2,095 reports of primary studies, and
- 244 reports of systematic reviews.

For the latest primary studies and systematic reviews evaluating diagnostic tests in physiotherapy visit *Evidence in your inbox*.

C. PEDro's most accessed articles in 2021

In 2021, PEDro answered more than 4.2 million questions. That means a new search was

performed every 7 seconds, on average.

Although PEDro contains more randomised controlled trials than systematic reviews and practice guidelines, the most commonly accessed articles by PEDro users were reviews and guidelines. This means that many physiotherapists are using the most condensed forms of high-quality evidence to guide their practice. Reviews synthesise the results of all available trials about a particular physiotherapy intervention for a specific health condition. Guidelines typically summarise the available reviews and other individual trials that were not included in those reviews.

The top 10 articles accessed in PEDro during 2021 were:

1. Chutkan NB, et al. Evidence-based clinical guidelines for multidisciplinary spine care: diagnosis and treatment of low back pain (2020). Read more on PEDro.
2. Rooney S, et al. Systematic review of changes and recovery in physical function and fitness after severe acute respiratory syndrome-related coronavirus infection: implications for COVID-19 rehabilitation. *Phys Ther* 2020;100(10):1717-29. Read more on PEDro.
3. George SZ, et al. Interventions for the management of acute and chronic low back pain: revision 2021. *J Orthop Sports Phys Ther* 2021;51(11):CPG1-CPG60. Read more on PEDro.
4. Hornby TG, et al. Clinical practice guideline to improve locomotor function following chronic stroke, incomplete spinal cord injury, and brain injury. *J Neurol Phys Ther* 2020;44(1):49-100. Read more on PEDro.
5. Liu K, et al. Respiratory rehabilitation in elderly patients with COVID-19: a randomized controlled study. *Complement Ther Clin Pract* 2020;39:101166. Read more on PEDro.
6. Kolasinski SL, et al. 2019 American College of Rheumatology/Arthritis Foundation guideline for the management of osteoarthritis of the hand, hip, and knee. *Arthritis Care Res* 2020;72(2):149-62. Read more on PEDro.
7. Managing the long-term effects of COVID-19 (SIGN161). Read more on PEDro.
8. Diercks R, et al. Guideline for diagnosis and treatment of subacromial pain syndrome: a multidisciplinary review by the Dutch Orthopaedic Association. *Acta Orthop* 2014;85(3):314-22. Read more on PEDro.
9. Hawk C, et al. Best practices for chiropractic management of patients with chronic musculoskeletal pain: a clinical practice guideline. *J Alternat Complement Med* 2020;26(10):884-901. Read more on PEDro.
10. Management of rotator cuff injuries clinical practice guideline (2019). Read more on PEDro.

D. DiTA's most accessed articles in 2021

In 2021, the Diagnostic Test Accuracy database (DiTA) was searched over 25,000 times by users in 147 countries.

Although DiTA contains more primary diagnostic test accuracy studies than systematic reviews of such studies, the most commonly accessed articles by DiTA users were primarily reviews. This means that many physiotherapists are using the most condensed forms of high-quality evidence to guide their practice. Reviews synthesise the results of all available studies about a particular diagnostic test for a specific health condition.

The top 10 articles accessed in DiTA during 2021 were:

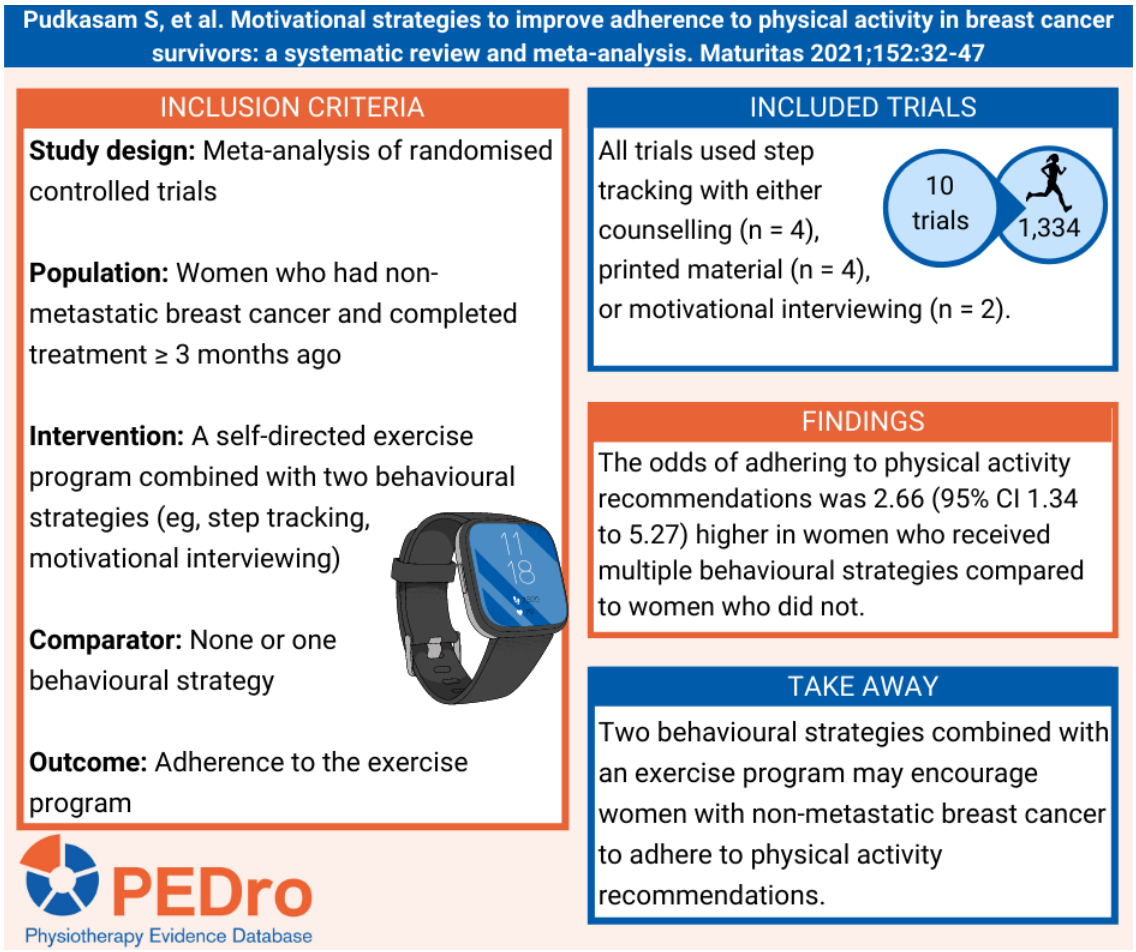
1. Hanchard NCA, et al. Physical tests for shoulder impingements and local lesions of bursa, tendon or labrum that may accompany impingement. *Cochrane Database Syst Rev* 2013;Issue 4. Read more on DiTA.
2. van der Windt DAWN, et al. Physical examination for lumbar radiculopathy due to disc herniation in patients with low-back pain. *Cochrane Database Syst Rev* 2010;Issue 2. Read more on DiTA.
3. Sleijser-Koehorst M, et al. Diagnostic accuracy of patient interview items and clinical tests for cervical radiculopathy. *Physiotherapy* 2021;111:74-82. Read more on DiTA.
4. Gonzalez Espinosa de los Monteros F, et al. Use of Neurodynamic or Orthopedic Tension Tests for the diagnosis of lumbar and lumbosacral radiculopathies: study of the diagnostic validity. *Int J Environ Res Public Health* 2020;17(19):26. Read more on DiTA.
5. Struyf T, et al. Signs and symptoms to determine if a patient presenting in primary care or hospital outpatient settings has COVID-19. *Cochrane Database Syst Rev* 2021;Issue 2. Read more on DiTA.
6. Petersen T, et al. Clinical classification in low back pain: best-evidence diagnostic rules based on systematic reviews. *BMC Musculoskelet Disord* 2017;18(1):188. Read more on DiTA.
7. Karanasios S, et al. Diagnostic accuracy of examination tests for lateral elbow tendinopathy (LET): a systematic review. *J Hand Ther* 2021 Feb 27:Epub ahead of print. Read more on DiTA.
8. Henschke N, et al. Red flags to screen for malignancy in patients with low-back pain. *Cochrane Database Syst Rev* 2013;Issue 2. Read more on DiTA.
9. Saueressig T, et al. Diagnostic accuracy of clusters of pain provocation tests for detecting sacroiliac joint pain: systematic review with meta-analysis. *J Orthop Sports Phys The* 2021;51(9):422-31. Read more on DiTA.

10. Tawa N, et al. Accuracy of clinical neurological examination in diagnosing lumbo-sacral radiculopathy: a systematic literature review. *BMC Musculoskelet Disord* 2017;18(93):Epub. Read more on DiTA.

E. Infographic for systematic review that found that behavioural strategies combined with self-directed exercise programs increase adherence with physical activity in women who had breast cancer

Last month we summarised the systematic review by Pudkasam et al. The review concluded that behavioural strategies combined with self-directed exercise programs increase adherence with physical activity in women who had breast cancer.

Some suggestions for using behavioural strategies in conjunction with exercise programs for women with breast cancer are included in this infographic.



Pudkasam S, et al. Motivational strategies to improve adherence to physical activity in breast cancer survivors: a systematic review and meta-analysis. *Maturitas* 2021;152:32-47

Read more on PEDro.

F. Systematic review found that neuromuscular electrical stimulation improves activities of daily living after stroke

Stroke is a leading cause of disability and is typically associated with loss of motor function and reduced ability to perform activities of daily living. Electrical stimulation is recommended in clinical guidelines, but previous systematic reviews have not differentiated between different levels of patient involvement during the application of stimulation. This review aimed to estimate the effect of electrical stimulation without active involvement (neuromuscular electrical stimulation) compared to no electrical stimulation on activities of daily living and functional motor ability in adults with stroke.

A protocol that was specified a priori guided the methods. Sensitive searches performed in five databases (including PubMed and PEDro) and citation tracking were used to identify randomised controlled trials that were published in English. Participants were adults with clinically diagnosed stroke with any level of paresis severity or chronicity. Intervention was neuromuscular electrical stimulation administered to either the upper or lower limb through surface electrodes to elicit a visible muscle contraction with no active involvement from the patient plus usual rehabilitation. The comparator was usual rehabilitation only. The primary outcome was activities of daily living. Functional motor ability was the secondary outcome. Two independent reviewers selected trials for inclusion, evaluated risk of bias and extracted data. Any disagreements were resolved by consensus discussions or by a third reviewer. Risk of bias was evaluated using the PEDro scale and the Cochrane risk of bias tool. Certainty of evidence was not evaluated. Meta-analysis was used to pool the included trials to calculate standardised mean differences and 95% confidence intervals (CI). Three subgroup analyses were specified: location of stimulation (upper vs. lower limb); time post-stroke (acute vs. subacute vs. chronic); and, severity of paresis (mild vs. moderate vs. severe).

20 trials (956 participants) were included in the meta-analyses. Participants had a mean age of 62 years and were predominantly male (54%). The location of stimulation was the upper limb in 13 trials (primarily shoulder abductors, wrist extensors) and the lower limb in 7 trials (primarily ankle dorsiflexors). The time post stroke was acute (ie, < 7 days) for 3 trials, subacute (ie, 7 days to 6 months) for 13 trials and chronic (ie, > 6 months) for 4 trials. The severity of paresis was moderate in 5 trials and severe in 6 trials, with no trials investigating participants with mild paresis, 5 trials having a range of severities and 4 trials not reporting severity. The intervention was applied for 10-60 minutes/session, 1-4 sessions/day and 3-7 days/week for 3-12 weeks. Cyclic stimulation was typically used (frequency 30 Hz, fixed pulse width of 200-300 microseconds) with the amplitude adjusted

to achieve a visible muscle contraction or joint movement. 13 trials scored 6/10 or more on the PEDro scale.

Compared to control, participants in the neuromuscular electrical stimulation groups had a mean of 0.41 standard deviations better activities of daily living score (95% CI 0.14 to 0.67; 10 trials; 428 participants) at follow-up. This translates to a mean of 9 points more on the 0-100 version of the Barthel Index (95% CI 3 to 15), the scale most used to measure activities of daily living in the review, for neuromuscular electrical stimulation compared to control. [Note: the baseline standard deviation for the Barthel Index from an inception cohort study (https://doi.org/10.1002/ehf2.12917) and guidance from the Cochrane Handbook v6.1 were used to calculate this estimate]. Compared to control, the mean functional motor ability score was 0.15 standard deviations higher in the electrical stimulation groups (95% CI -0.13 to 0.43; 13 trials; 659 participants). Because the 95% CI for this estimate includes zero, the intervention may have no effect for this secondary outcome.

Subgroup analyses revealed that effects for activities of daily living were slightly larger for the upper limb (standardised mean difference 0.34, 95% CI 0.04 to 0.64; 6 trials; 266 participants) than for the lower limb (standardised mean difference 0.49, 95% CI -0.04 to 1.03; 4 trials; 162 participants). Effects were also slightly larger in subacute stroke (standardised mean difference 0.44, 95% CI 0.10 to 0.78; 7 trials; 310 participants) than in chronic stroke (standardised mean difference 0.35, 95% CI -0.14 to 0.84; 3 trials; 118 participants), and there were no trials for this outcome for acute stroke. Severe paresis (standardised mean difference 0.36, 95% CI -0.55 to 1.26; 3 trials; 142 participants) and moderate paresis (standardised mean difference 0.21, 95% CI -0.16 to 0.58; 3 trials; 119) had similar effects, with no data being available for mild paresis.

Neuromuscular electrical stimulation provided in addition to usual rehabilitation improved activities of daily living post stroke more than usual rehabilitation alone. This was particularly evident for the upper limb and in subacute stroke. Neuromuscular electrical stimulation had little impact on functional motor ability.

Kristensen MGH et al. Neuromuscular electrical stimulation improves activities of daily living post stroke: a systematic review and meta-analysis. *Arch Rehabil Res Clin Transl* 2022;4:100167

Read more on PEDro.

G. Choosing the best randomised controlled trials to inform practice

Selecting the best research to read is one aspect of evidence-based practice. Randomised controlled trials estimate the difference in outcomes between an intervention and a comparator for a sample of participants. But are all trials free from bias? The short answer is “No”.

A recent Research Note published in the *Journal of Physiotherapy* discusses how flaws in the design, conduct and reporting of trials can introduce bias that distorts the size of the effect estimates. The Research Note offers guidance for clinicians and educators to choose the best trials to read to inform their practice and teaching. Some resources for researchers to account for bias in systematic reviews and minimise bias in designing and reporting trials are also provided.

There are many sources of bias in trials. The Research Note focuses on how trial participants are allocated to groups (randomisation and concealment), blinding of key people involved in the trial (participants, therapists and assessors) and the completeness of follow-up. Tools have been developed for evaluating the risk of bias in trials, including the Physiotherapy Evidence Database (PEDro) scale and Cochrane risk of bias tool (version 1 and 2). The Research Note summarises the content, validity and reliability of each tool. Guidance is also given on how to interpret the summary score of the PEDro scale.

Resources to minimise risk of bias in trials and systematic reviews are available for researchers. Consensus statements and checklists have been developed to assist researchers to plan (eg, the Standard Protocol Items Recommendations for Interventional Trials (SPIRIT) statement) and report the results of trials (eg, the Consolidated Standards of Reporting Trials (CONSORT) statement), and to judge the certainty of evidence in systematic reviews (eg, the Grading of Recommendations, Assessment, Development and Evaluations (GRADE)).

While the focus of the Research Note is the risk of bias in randomised controlled trials evaluating the effects of interventions, there are research designs that answer other important questions that are also at risk of bias. Some common tools for each study type are suggested.

The ability to quickly identify trials that are relatively free from bias from ones that are not is an important skill for physiotherapists to master. One strategy is to memorise important sources of bias, and another is to use evidence resources that include some pre-appraisal of trials.

Moseley AM, Pinheiro MB. Research Note: Evaluating risk of bias in randomised controlled trials. *J Physiother*; epub ahead of print 10 March 2022

H. Next PEDro and DiTA updates (May 2022)

The next PEDro and DiTA updates are on Monday 2 May 2022.

Proudly supported by

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