PEDro Newsletter 8 October 2019

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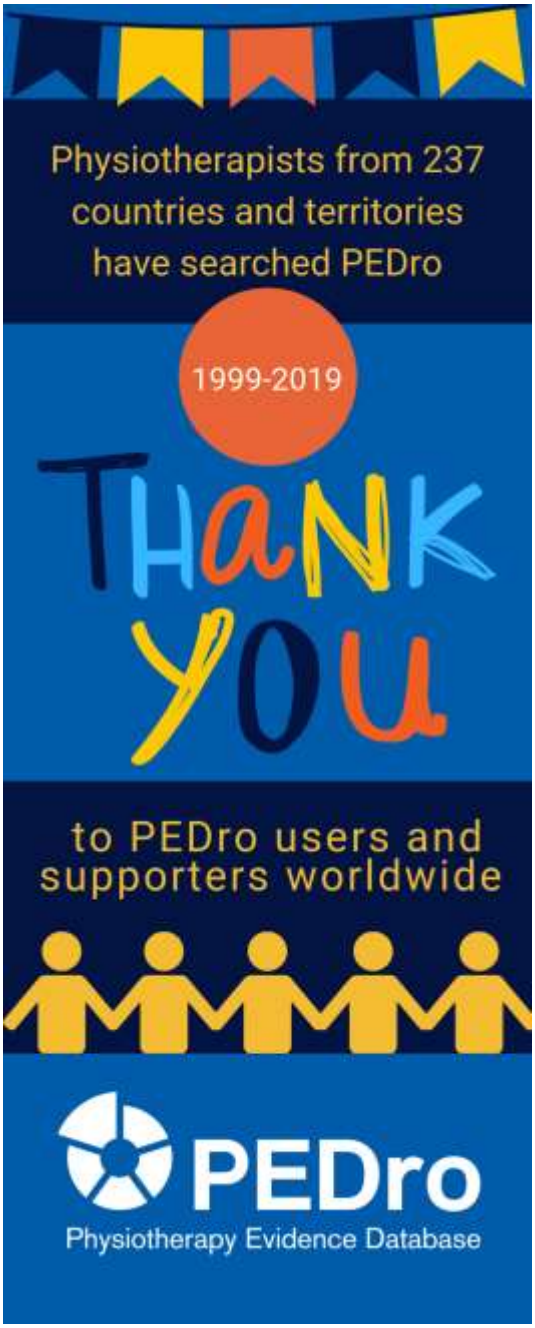
A. PEDro update (8 October 2019)

PEDro contains 44,926 records. In the 8 October 2019 update you will find:

- 35,088 reports of randomised controlled trials (34,278 of these trials have confirmed ratings of methodological quality using the PEDro scale)
- 9,182 reports of systematic reviews, and
- 656 reports of evidence-based clinical practice guidelines.

PEDro was updated on 8 October 2019. For latest guidelines, reviews and trials in physiotherapy visit *Evidence in your inbox*.

B. PEDro celebrates 20 years of informing physiotherapy – thank you for your support



October 2019 marks PEDro's 20th birthday! For 20 years PEDro has been providing physiotherapists around the world with easy access to high-quality clinical research so they can practice effectively and safely. We are proud to have had this impact on the practice of physiotherapy world-wide, and we'd like to take this opportunity to thank all of our PEDro users and supporters.

PEDro was conceived in 1999, just 4 years after the launch of the Cochrane Database of Systematic Reviews, when evidence-based practice was in its infancy. Since then PEDro has been used to answer over 24-million questions. These searches have been performed by physiotherapists from 237 countries and territories. At the top of the league table of PEDro users is Brazil (23%), followed by the United States (9%), Spain (8%), Australia (7%), and France (5%).

The exponential growth in the number of trials, reviews and guidelines evaluating physiotherapy interventions has been tracked by PEDro. When launched in 1999, PEDro contained just 600 articles. In the October 2019 update PEDro contains nearly 45,000 articles. PEDro is predicted to double in size over the next 6 years.

To celebrate 20 years of informing physiotherapy practice, PEDro will be identifying the Top 5 Trials published in 2014-2019 and launching a sister database that indexes primary studies and systematic reviews evaluating the accuracy of diagnostic tests used by physiotherapists (called DiTA). We will also be refreshing the PEDro web-site.

C. PEDro Top 5 Trials in 2014-2019 will be announced in November 2019

To celebrate PEDro's 20th birthday we are identifying the 5 most important randomised controlled trials in physiotherapy published in the years 2014-2019. These trials will be added to the best 15 physiotherapy trials that were identified to commemorate PEDro's 15th birthday back in 2014.

Thank you to all the PEDro users who nominated a trial. An independent panel of international trialists is currently judging the nominations received. The PEDro Top 5 Trials will be announced in November 2019.

To give you a sneak preview of what to expect, we have produced a short video for one of the best 15 physiotherapy trials published before 2014. The trial was led by Olsen and used a cluster design to evaluate the effects of exercises to prevent lower limb injuries in youth sport. This trial was nominated because it was one of the early trials, and remains one of the best trials, looking at sports injury prevention. It found that a structured program of warm-up exercises can prevent knee and ankle injuries in young people playing sports.

Olsen OE, et al. Exercises to prevent lower limb injuries in youth sports: cluster randomised controlled trial. *BMJ* 2005;330(7489):449-455

Read more on PEDro.

D. Introducing DiTA, a database of Diagnostic Test Accuracy in physiotherapy produced by the PEDro Partnership

The PEDro Partnership is very excited to announce the launch of a new database. Called DiTA (for **Di**agnostic **T**est **A**ccuracy), this database indexes articles evaluating the accuracy of diagnostic tests used by physiotherapists.

DiTA is designed to enable clinicians, researchers and patients to easily access information on the accuracy of diagnostic tests used by physiotherapists. DiTA is built on the same platform as PEDro. Unlike PEDro, which indexes evidence of the effects of physiotherapy interventions (randomised controlled trials, systematic reviews, and clinical practice guidelines), DiTA indexes evidence (primary studies and systematic reviews) of the accuracy of diagnostic tests relevant to physiotherapy. Like PEDro, DiTA will be freely accessible to all and, we hope, easy to use.

The DiTA web-site has three main elements: SEARCH, BROWSE, and LEARN. Soon you will be able to search the DiTA database to answer a clinical question. We are currently working hard to get the search interface online.

Soon you will be able to BROWSE to view the latest articles in DiTA. This will operate in a similar way to PEDro's *Evidence in your inbox* - you can sign up to receive the most recent studies and reviews each time DiTA is updated. We have started collecting subscriptions for DiTA's *Evidence in your inbox.*

You can LEARN more about diagnostic tests in physiotherapy by taking one of the DiTA tutorials. Two tutorials are now available: "Is this study valid?" and "How can I use evidence of diagnostic test accuracy?".

You may be interested in reading a recent editorial published in the *Journal of Physiotherapy* that provides more information about DiTA:

Kaizik MA, et al. DiTA: a database of diagnostic test accuracy studies for physiotherapists. *J Physiother* 2019;65(3):119-120

E. #MyPTArticleOfTheMonth – how to read a diagnostic test accuracy paper

The logic of diagnostic test accuracy studies is simple. In these studies, a sample of people suspected of having a particular condition are assessed with the diagnostic test of interest (called the "index test"). The same people also have another test applied to them that is thought to accurately measure the condition of interest. This test is called a "reference test" or "reference standard", or sometimes the "gold standard test". As the reference test is assumed to be accurate, the index test is said to be accurate if it is found to give the same results as the reference test. The degree of concordance between the index test and the reference test provides a measure of the accuracy of the index test.

When reading a report of a study of diagnostic test accuracy, you should look for study characteristics that suggest the study is likely to provide trustworthy estimates of the accuracy of the diagnostic test. Ask three questions:

1. Was the reference test accurate?
2. Was the index test conducted and interpreted without knowledge of the finding of the reference test?
3. Was the study conducted on people for whom there was diagnostic uncertainty?

To find out more about how to read a diagnostic test accuracy paper visit the DiTA tutorials.

Your ability to read scientific articles will improve with practice. Make the commitment to read at least one article per month and share your reading with the global physiotherapy community in #MyPTArticleOfTheMonth.

F. #MyPTArticleOfTheMonth – what is Kari Bø reading?

Physiotherapist and exercise scientist Kari Bø is a Professor in the Norwegian School of Sport Sciences in Oslo, Norway. She has published over 270 peer-reviewed articles in the field of continence and women's health (topics include pelvic floor dysfunction, treatment of incontinence and back/pelvic pain, exercise during pregnancy and after childbirth, diastasis recti abdominis, measurement methodology). Kari has received numerous international awards, including one of her randomised controlled trials on pelvic floor muscle training being named as a PEDro 15 top trials (2014), the Mildred Elson Award from the World Confederation of Physiotherapy (2015), and the International Continence Society Lifelong Achievement Award (2016).

Kari attended the International Continence Society's annual conference in Gothenburg, Sweden in September 2019. Two randomised controlled trials and a long-term follow-up study caught her eye.

Dumoulin C, et al. Group physiotherapy compared to individual physiotherapy to treat urinary incontinence in older women: a non-inferiority randomized controlled trial. Presented at ICS 2019; Gothenburg, Sweden; 3-6 September 2019. (Note: the trial is registered and the protocol has been published.)

This well-designed non-inferiority, multicenter randomised controlled trial compared individual pelvic floor muscle training to group training for women with stress and mixed urinary incontinence. Participants undertook 12 weeks of 1-hour weekly one-on-one or group training sessions (note: before starting group training, participants had an individual session with a trained physiotherapist). Participants in both groups did exercises at home. Participants in both groups attended almost 100% of sessions and completed 86% of the home exercise. At one year follow-up the median reduction in the frequency of incontinence was 70% in individual training compared to 74% for group training. There were no differences between the groups in any outcome measures. Kari says: "since I published my trial in 1990, physiotherapists have debated the effect of group vs individual training. This trial clearly shows that group training is not inferior to individual training." Some advantages of group pelvic floor muscle training is that it is less resource intense than individual training, is motivating for both participants and the physiotherapist, and the training can be combined with health education and many other exercises important for women's health.

Hagen S et al: Effectiveness and cost-effectiveness of biofeedback-assisted pelvic floor muscle training for female urinary incontinence: a muticentre randomized controlled trial. Presented at ICS 2019; Gothenburg, Sweden; 3-6 September 2019. (Note: the trial was registered and the protocol has been published.)

This large-scale (n=600), multicentre trial compared electromyography (EMG) biofeedback-assisted pelvic floor muscle training to pelvic floor muscle training alone for women with stress or mixed urinary incontinence. Each participant was offered 6 appointments over 16-week period, received an individually tailored program, and undertook home training. Participants in the EMG biofeedback group also received biofeedback during the appointments and were given biofeedback units for home use. Outcome data were collected via questionnaire at 6 months, 1 and 2 years. There were no differences between the groups in any outcome at any time-point. The trial concluded that adding EMG biofeedback to pelvic floor muscle training offers no benefit over pelvic floor muscle training alone in terms of long term continence outcome. Kari says: "this high-quality trial has an important message for physiotherapists treating women with urinary incontinence - pelvic floor muscle training is the key element of treatment."

McClurg D, et al. A 10-year data-linkage follow up study of a trial of pelvic floor muscle training for prolapse. Presented at ICS 2019; Gothenburg, Sweden; 3-6 September 2019.

This is a 10-year follow-up of women with pelvic organ prolapse who were participants in the POPPY trial that compared pelvic floor muscle training to control (receiving a prolapse lifestyle advice leaflet). Only the Scottish part of the trial (11 out of 23 centres) was included in the follow-up. Linking to outpatient and inpatient hospital activity data between the date of randomisation and the end of the linkage period was carried out. Compared to control, a lower proportion of participants in the pelvic floor muscle training group had received hospital treatment (adjusted odds ratio 0.60, 95% confidence interval 0.36 to 0.98). The median time to first treatment or censoring in the intervention group was 3,008 days (interquartile range 589 to 3,396) compared to 2,242 days for the control group (628.5 to 3279). Kari says: "despite there being level 1 evidence supporting the use of pelvic floor muscle training as the first line treatment of pelvic organ prolapse, the long-term effects of physiotherapy interventions is always questioned. The results of this long-term follow up study are important, especially today when there is a global concern about the devastating complications that occur after mesh surgery. There is a need for more trained physiotherapists to offer evidence-based pelvic floor muscle training to this patient group."

G. Support for PEDro comes from the Canadian Physiotherapy Association

We thank the Canadian Physiotherapy Association who have just renewed their partnership with PEDro for another year.

H. There is moderate agreement for half of the PEDro scale and Cochrane risk of bias items that evaluate similar constructs

Two recent articles have evaluated the measurement properties of the PEDro scale. This first article assessed the agreement between the PEDro scale and the Cochrane risk of bias tool, and is summarised in this newsletter item.

Critical appraisal of trial risk of bias (methodological quality) is one of the five steps of evidence-based practice. Two instruments that are commonly used to assess the risk of bias of trials of physiotherapy interventions are the Cochrane risk of bias (CROB) tool and the PEDro scale. While both instruments have different approaches to assessing risk of bias, they have six items in common (random allocation; concealed allocation; blinding of participants, personnel and assessors; and incomplete outcome data). To date, only one study has made a direct comparison between the PEDro scale and CROB tool in trials of physiotherapy interventions, concluding that there was poor agreement between the instruments. The primary objective of this study was to determine the convergent validity (level of agreement) between individual items from the PEDro scale and CROB tool that evaluate similar constructs and for summary scores. The secondary objective was to determine the level of agreement between different thresholds for “acceptable” risk of bias between the summary scores for the CROB tool and PEDro scale.

The Cochrane Library was searched to identify trials included in systematic reviews evaluating physiotherapy interventions. For trials that met the inclusion criteria (primary reference in Cochrane review, review used 2008 version of the CROB tool, and indexed in PEDro), CROB items were extracted from the reviews and PEDro items and total score were downloaded from PEDro. Kappa statistics were used to evaluate agreement between CROB and PEDro items that evaluate similar constructs. The total PEDro score was compared to the CROB summary score (% of items met) using an Intraclass Correlation Coefficient. Sensitivity analyses were used to explore the impact of the CROB “unclear” category and variants of CROB blinding items on agreement. Kappa statistics were used to determine agreement between different thresholds for “acceptable” risk of bias between CROB and PEDro scale summary scores.

1442 trials from 108 Cochrane reviews were included in the analyses. Agreement was “moderate” for three of the six CROB and PEDro scale items that evaluate similar constructs (allocation concealment, participant blinding, assessor blinding; Kappa = 0.479–0.582). Agreement between the summary scores

was “poor” (Intraclass Correlation Coefficient = 0.285). Agreement was highest when the “unclear” CROB category was collapsed with “high” and when CROB participant, personnel and assessor blinding were evaluated separately. Agreement for different thresholds for “acceptable” risk of bias between instruments was, at best, “fair”.

There was moderate agreement for half of the PEDro scale and CROB items that evaluate similar constructs. Interpretation of the CROB “unclear” category and variants of the CROB blinding items substantially influenced agreement. The authors caution against the use of thresholds for “acceptable” risk of bias for both the CROB tool and PEDro scale. Either instrument can be used to quantify risk of bias, but they can’t be used interchangeably.

Moseley AM, et al. Agreement between the Cochrane risk of bias tool and Physiotherapy Evidence Database (PEDro) scale: a meta-epidemiological study of randomized controlled trials of physical therapy interventions. *PLoS One* 2019;14(9):e0222770

I. Summary of measurement properties of the PEDro scale

Two recent articles have evaluated the measurement properties of the PEDro scale. This second article summarised the clinimetric properties of the PEDro scale, and is summarised in this newsletter item.

The PEDro score has demonstrated ‘fair’ to ‘excellent’ inter-rater reliability (Intraclass Correlation Coefficient 0.53-0.91) for randomised controlled trials of physiotherapy interventions, and ‘excellent’ inter-rater reliability (Intraclass Correlation Coefficient 0.80-0.89) for trials of pharmacological interventions. The inter-rater reliability for the individual PEDro scale items ranges from ‘fair’ to ‘almost perfect’ (Kappa 0.36-1.00) for physiotherapy trials, and from ‘moderate’ to ‘almost perfect’ (Prevalence And Bias Adjusted Kappa 0.51-1.00) in pharmacological trials. The inter-rater reliability for both the total PEDro score and individual PEDro scale items has been shown to increase with consensus ratings generated by groups of two or three raters. Evidence to support construct validity has been reported for the PEDro scale and the total PEDro score, with data supporting the total PEDro score to discriminate between high-quality and low-quality trials. Convergent validity is supported for the total PEDro score through correlations with other quality rating tools: the Jadad scale (r = 0.35) and van Tulder 2003 scale (0.71) for trials of physiotherapy interventions; and the Cochrane Back and Neck Group risk of bias tool (0.61) for trials of pharmacological interventions.

While the authors report that total PEDro scores of 0-4 are considered ‘poor’, 4-5 ‘fair’, 6-8 ‘good’, and 9-10 ‘excellent’, it is important to note that these classifications have not been validated. Furthermore, for trials evaluating complex interventions (e.g., exercise) a total PEDro score of 8/10 is optimal.

Cashin AG, et al. Clinimetrics: Physiotherapy Evidence Database (PEDro) Scale. *J Physiother* 2019 Sep 11:Epub ahead of print

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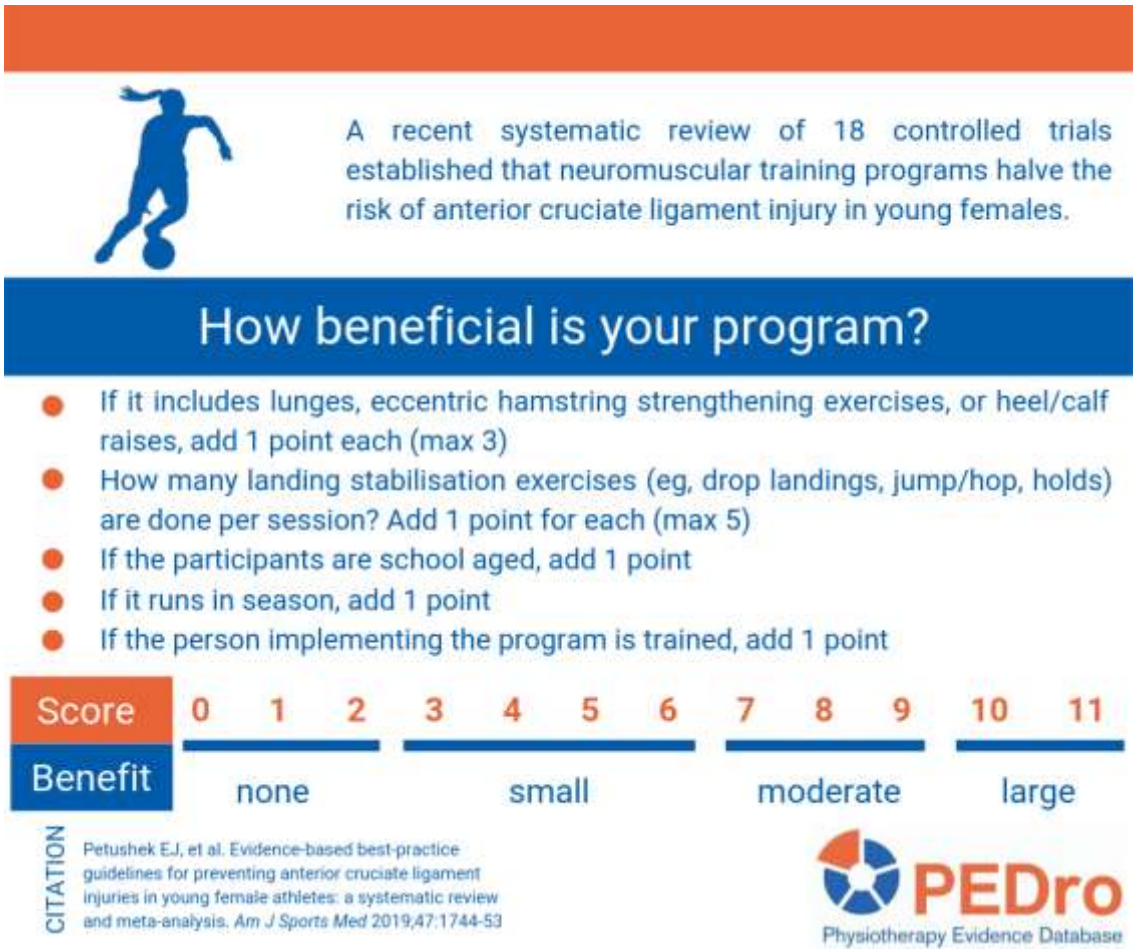
J. Infographic for systematic review that found that neuromuscular training reduces anterior cruciate ligament injury in female athletes



Last month we summarised the Petushek et al systematic review. The review concluded that neuromuscular training reduces anterior cruciate ligament injury in female athletes. Data from the meta-regression were used to produce a best-practice checklist that can be used to evaluate neuromuscular training programs.

You can evaluate how beneficial the injury prevention programs you provide are using this infographic. The algorithm illustrated in the infographic is based on data from the meta-regression analysis in the review.

Petushek EJ, et al. Evidence-based best-practice guidelines for preventing anterior cruciate ligament injuries in young female athletes: a systematic review and meta-analysis. *Am J Sports Med* 2019;47(7):1744-53

Read more on PEDro.

K. Systematic review found that interventions using activity trackers improve physical activity levels and mobility among older people

A recent systematic review sought to determine the effect of interventions using activity trackers on physical activity levels and mobility compared with usual care or another physical activity intervention in older people. The review searched eight databases to identify randomised controlled trials involving participants aged 60 years and older. Trials enrolling healthy older adults or older adults with health conditions were eligible. The primary outcome was physical activity quantified as steps per day and measured using an activity tracker or accelerometer. Other types of objective measures of physical activity (e.g., time in moderate-to-vigorous physical activity) or self-reported physical activity measures were excluded. Secondary outcomes included mobility. The methodological quality of the trials was measured with the PEDro scale. The quality of the evidence was assessed with the GRADE approach.

Twenty-three randomised trials including 2,766 participants, with publication dates ranging from 2003 to 2017, were included in the review. There is low quality evidence that participants allocated to activity tracker interventions increased their physical activity levels by 1,558 steps per day (95% confidence interval (CI) 1,099 to 2,018) more than control participants after the intervention. At 12 months post-intervention, the differences between activity tracker and control interventions were not sustained (1 trial, 571 participants; mean difference 210 steps 95% CI -148 to 567). There was moderate quality evidence that activity tracker interventions improved mobility compared to control interventions (3 trials, 218 participants, standardised mean difference 0.61, 95% CI 0.31 to 0.90). Meta-regression did not find any differences in physical activity levels between: trials conducted in healthy populations (9 trials, standardised mean difference 0.61, 95% CI 0.25 to 0.96) versus populations with health conditions (14 trials, standardised mean difference 0.54, 95% CI 0.25 to 0.82)); trials using accelerometers (7 trials, standardised mean difference 0.24; 95% CI -0.15 to 0.63) versus trials using pedometers (16 trials, standardised mean difference 0.69; 95% CI 0.45 to 0.93); or trials with small (< 100 participants) sample sizes (15 trials, standardised mean difference 0.72; 95% CI 0.42 to 1.01) versus large sample sizes (8 trials, standardised mean difference 0.40; 95% CI 0.10 to 0.70). In contrast, a significant interaction between intervention duration and effect size was found, with longer interventions (12 or more weeks) having a larger impact on increasing physical activity levels (18 trials, standardised mean difference 0.70, 95% CI 0.47 to 0.93) compared to shorter interventions (5 trials, standardised mean difference 0.14; 95% CI -0.26 to 0.54).

Oliveira JS, et al. Effect of interventions using physical activity trackers on physical activity in people aged 60 years and over: a systematic review and meta-analysis. *Br J Sports Med* 2019 Aug 9:Epub

ahead of print

Read more on PEDro.

L. Next PEDro update (November 2019)

The next PEDro update is on Monday 4 November 2019.

Proudly supported by

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