PEDro Newsletter 1 July 2019

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PEDro

Physiotherapy Evidence Database

A. PEDro update (1 July 2019)

PEDro contains 43,951 records. In the 1 July 2019 update you will find:

- 34,361 reports of randomised controlled trials (33,522 of these trials have confirmed ratings of methodological quality using the PEDro scale)
- 8,906 reports of systematic reviews, and
- 684 reports of evidence-based clinical practice guidelines.

PEDro was updated on 1 July 2019. For latest guidelines, reviews and trials in physiotherapy visit *Evidence in your inbox*.

B. PEDro #MyPTArticleOfTheMonth challenge spreads to Dutch-speaking physiotherapists

A new partner, Koninklijk Nederlands Genootschap voor Fysiotherapie, has joined the PEDro #MyPTArticleOfTheMonth challenge.

Many physiotherapists have signed up for the #MyPTArticleOfTheMonth challenge and have started sharing their reading with the global physiotherapy community. We invite all physiotherapists to join in the challenge.

To support this global challenge, the PEDro #MyPTArticleOfTheMonth video is now available in Portuguese, French, and Dutch.

Don’t forget to share your reading with the global physiotherapy community by using the hashtag #MyPTArticleOfTheMonth on Twitter or Facebook.

C. #MyPTArticleOfTheMonth resource – 95% confidence intervals explained

The purpose of conducting a randomised controlled trial, or a systematic review of randomised controlled trials, is to determine the size of the treatment effect (or the difference in outcome for the treatments being compared). The mean (or average) difference in outcome between the treatment groups is called the point estimate. The point estimate is our best guess of the true value of the treatment effect.

But the point estimate comes with some uncertainty, and this uncertainty can be quantified using confidence intervals. At the centre of the confidence interval is the point estimate, but now there is some room on either side of the point estimate for uncertainty. Confidence intervals always have a lower and an upper limit, which indicates that the true effect may be somewhere within this interval, and the width of the confidence interval represents the precision of the treatment effect estimate. If the confidence interval is narrow, the size of the treatment effect is known more precisely. Different levels of confidence intervals can be calculated (eg, 95%, 99%), but the type most commonly reported in trials and reviews is the 95% confidence interval.

Interpretation of confidence intervals will be explained using a hypothetical trial that found a mean difference of 2 points in a 0-10 pain scale between treatment A and treatment B (control) with a 95% confidence interval ranging from 1 to 3 points. That is, at the end of the trial patients receiving treatment A had 2 (out of 10) points lower pain, on average, compared to patients receiving treatment B. A simple interpretation of the confidence interval is that if the same trial was repeated 100 times, in 95 of the repeats the point estimate would fall between 1 and 3 points. Alternatively, we can say that we are 95% confident that the true effect of the intervention lies somewhere between 1 and 3 points.

Reporting of the point estimate and its confidence interval provides physiotherapists reading trials (and reviews) with richer information than just reporting the probability value (or p-value) produced by statistical testing. P-values only indicate if the observed difference is statistically significant ($p<0.05$) or not ($p>0.05$). Point estimates and confidence intervals indicate the magnitude and precision of the effect. The confidence interval also indicates the results of statistical testing - if the 95% confidence interval includes “0” (no effect) there is no statistical difference between the groups ($p>0.05$).

The good news for physiotherapists is that the use of confidence intervals in trial reports is increasing steadily over time. In 2016, 42% of physiotherapy trials reported confidence intervals.

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.

D. #MyPTArticleOfTheMonth – what is Kate Scrivener reading?

Dr Kate Scrivener is a clinician, researcher and educator in neurological physiotherapy in Sydney, Australia. Kate has expertise in rehabilitation after stroke, with a particular interest in using exercise and technology to empower people with stroke to drive their rehabilitation. She is a Senior Lecturer at Macquarie University and is part of the StrokeEd Collaboration. As the head of neurology at Concentric Rehabilitation Centre, Kate is a consultant physiotherapist as well as a mentor to staff. An important aspect of this role is ensuring that all staff are actively engaged with translating the latest evidence into their clinical practice.

A major challenge in stroke rehabilitation is how best to drive recovery in arm function and prevent secondary complications like pain. Kate has recently read three research articles on this topic.

Rodgers H, et al. Robot assisted training for the upper limb after stroke (RATULS): a multicentre randomised controlled trial. *Lancet* 2019 May 21:Epub ahead of print

This is a rigorous, large-scale (n=770) randomised controlled trial involving people with stroke who had moderate to severe limitation in arm function. There were three treatment arms: robot-assisted training, intensive repetitive practice, and usual care. Both the robot-assisted and intensive repetitive practice groups completed about 24 hours of arm training over the over a 12-week period. There were no between-group differences in the primary outcome (Action Research Arm Test) at the 3-month follow-up. This means that robot-assisted training was not superior to usual care, and nor was intensive repetitive practice. Kate says: “In Australia there is minimal access to robotics in clinical practice. This large trial suggests that there is no advantage to having robotics over usual care.” Kate was interested that 42-50% of participants in each group made a clinically meaningful change in their Action Research Arm Test score. Kate says: “This suggests that change in arm function is possible for some individuals after stroke, and there is research in progress to better determine who those individuals are.”

Ward NS, et al. Intensive upper limb neurorehabilitation in chronic stroke: outcomes from the Queen Square programme. *J Neurol Neurosurg Psychiatry* 2019;90(5):498-506

This article also challenges the assumption that it is not possible to improve arm function after stroke, especially in the chronic phase. This is a single-group, uncontrolled study involving a large cohort (N=224) of people with stroke (but people with with complete paralysis and severe spasticity were excluded), with intervention starting an average of 18 months post-stroke. The intervention involved repetitive task practice and was intensive, with 90 hours of intervention delivered over a 3-week period. At the 6-month follow up 62% of participants had made a clinically meaningful change in their Action Research Arm Test score.

Kate says: “This article shows us how much practice is possible. A 90-hour intervention is substantial, I have not seen this intensity of practice reported in previous research.” Kate is mindful, however, that the article only reports the change scores for a single group and that the intervention does need to be evaluated in a randomised controlled trial.

Andringa A, et al. Effectiveness of botulinum toxin treatment for upper limb spasticity after stroke over different ICF domains: a systematic review and meta-analysis. *Arch Phys Med Rehabil* 2019 Feb 22:Epub ahead of print

This large (40 trials, 2,718 participants) systematic review and meta-analysis quantifies the effects of botulinum toxin on upper limb spasticity after stroke. Interestingly, the outcomes were reported using the International Classification of Functioning, Disability and Health framework. The review concludes that botulinum toxin reduces resistance to passive movement and improves self care, but does not change arm or hand function, pain or range of motion. Kate says: “I find this review very useful because patients commonly ask me about this treatment. This review provides data to empowers individuals with stroke (and therapists) to make informed decisions about treatment.”

E. Anne Moseley reflects on the value of PEDro at #WCPT2019

Associate Professor Anne Moseley was recently interviewed at the World Confederation for Physical Therapy 2019 Congress in Geneva about the value of PEDro. At the Congress she received the prestigious Mildred Elson award for her leadership and commitment to the promotion of evidence-based physiotherapy through PEDro.

Watch the video to find out how PEDro started out as a clinical pearl and gradually snowballed to become the preeminent evidence-based resource for physiotherapists worldwide.

F. Support for PEDro comes from the Koninklijk Nederlands Genootschap voor Fysiotherapie and Axxon

We thank Koninklijk Nederlands Genootschap voor Fysiotherapie and Axxon who have just renewed their partnership with PEDro for another year.

G. Support PEDro in 2019

PEDro is produced on a not-for-profit basis using donations from industry partners and individual physiotherapists.

We need more partners to help us keep PEDro up-to-date and freely accessible around the world. From private practices to hospitals, government departments and universities, we can tailor a sponsorship package to suit any organisation. If your organisation would like to invest in the future of physiotherapy, please contact us.

Another way we can pay for PEDro and keep it free is through donations from users. You can choose an amount that suits your budget. We truly appreciate your help.

Donate Now

H. Nominate a trial for PEDro's Top 5 Trials in 2014-2019

PEDro will celebrate its 20th anniversary in October 2019. To mark this important milestone we want to identify 5 of the most important randomised controlled trials in physiotherapy published in the years 2014-2019.

High-quality randomised controlled trials are essential for physiotherapy practice and teaching. Back in 2014 we commemorated PEDro's 15th birthday by identifying the best 15 physiotherapy trials of all time. These were ground-breaking trials that changed the way people with a variety of conditions are treated. Some of the trials set the stage for breakthroughs, some represented a paradigm shift, and all of them marked important milestones in the evolution of physiotherapy treatment. Interviews with the lead authors of the top 15 trials are available in the PEDro top 15 trials page.

We now want to expand this list by adding the top 5 trials published in 2014-2019.

PEDro users are invited to nominate randomised controlled trials evaluating physiotherapy interventions for consideration. The trials need to answer important clinical questions in a robust and innovative way. Only trials that have results published in a peer-reviewed journal article in the years 2014-2019 will be considered.

Nominations close on Monday 2 September 2019. Nominations will be judged by an independent panel of international trialists. The top 5 trials will be announced in October 2019.

Visit the PEDro web-site today to nominate a trial.

A video explaining the top 5 trials nomination process is available in English, Portuguese, Dutch, and Spanish.

I. Allocation concealment and intention-to-treat analysis do not influence the treatment effects of physiotherapy interventions in low back pain trials

A recently published meta-epidemiological study has evaluated if allocation concealment and intention-to-treat analysis influence the size of treatment effects of randomised controlled trials evaluating physiotherapy interventions for people with low back pain. Five databases (PubMed, Embase, Cochrane Database of Systematic Reviews, PEDro, CINAHL) were searched to identify low back pain trials that compared physiotherapy intervention to placebo, no intervention or minimal intervention and used pain and/or disability as outcomes. For each included trial the PEDro ratings for allocation concealment and intention-to-treat analysis were downloaded from PEDro and the pain and/or disability outcomes were extracted and converted to a 0-100 scale. A meta-regression was performed to evaluate the influence of concealed allocation and intention-to-treat analysis on treatment effect size. The analysis included 128 trials - 45% of the trials achieved allocation concealment and 32% performed intention-to-treat analysis. There was no influence of allocation concealment on treatment effects for pain (regression coefficient 0.009; 95% confidence interval (CI) -2.91 to 2.91) and disability (regression coefficient 1.13; 95% CI -1.35 to 3.62). There was also no influence of intention-to-treat analysis on treatment effects for pain (regression coefficient 1.38; 95% CI -1.73 to 4.50) or disability (regression coefficient 1.27; 95% CI -1.39 to 3.64). These results are consistent with previous research that investigated the impact of allocation concealment or intention-to-treat analysis on treatment effect estimates for continuous outcomes.

de Almeida MO, et al. Allocation concealment and intention-to-treat analysis do not influence the treatment effects of physiotherapy interventions in low back pain trials: a meta-epidemiologic study. *Arch Phys Med Rehabil* 2019 Jan 31:Epub ahead of print

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J. Keeping up-to-date with clinical research: an evaluation of PEDro's "Evidence in your inbox"

The PEDro team presented a paper evaluating the impact of "*Evidence in your inbox*" at the 13th International Society of Physical and Rehabilitation Medicine World Congress in Kobe, Japan in June 2019. The abstract for the paper is below. If you are interested in subscribing to "*Evidence in your inbox*" please visit the PEDro web-site.

BACKGROUND AND AIMS: Clinicians subscribe to journals, visit medical libraries or sign up for alerts to keep up-to-date with research. However, due to the large number of journals, these options are insufficient to keep abreast of all relevant and important research. Clinicians also waste precious time finding the best and most applicable research because alerts are not filtered. The Physiotherapy Evidence Database

(PEDro) indexes all trials, reviews and guidelines evaluating physiotherapy interventions, and now produces "*Evidence in your inbox*." This free monthly service overcomes the issue of scatter because of the exhaustive processes used to identify articles. The issue of filtering is addressed by separating the articles into practice areas and ranking the articles by method and quality. The aim of this study is to describe size, subscription and engagement rates for PEDro's "*Evidence in your inbox*."

METHODS: Data were extracted from 45 monthly feeds (October 2015 to June 2019) for 15 areas of practice (eg, cardiothoracics, gerontology, neurology). The size of each feed was recorded plus subscription and engagement (open rate and click rate) were downloaded from MailChimp.

RESULTS: The number of articles per feed ranged from 2 (whiplash) to 54 (musculoskeletal). There were 12,697 subscribers (musculoskeletal had the largest number (n=9,453) and cerebral palsy the smallest (n=1,227)), with rates growing steadily over time. Open rates are consistently 15-25%, with cerebral palsy having the highest (29%) and oncology the lowest (16%). The rate of clicking on one or more links within a feed is about 5%, being highest for musculoskeletal (8%) and lowest for oncology (2%).

CONCLUSIONS: "Evidence in your inbox" is a valuable resource for busy clinicians. Users could increase their engagement by subscribing to a single feed and getting into the routine of reading articles. PEDro could develop the resource by testing strategies to increase engagement.

K. Systematic review found that scoliosis-specific exercise may reduce spinal curvature

The aim of this systematic review was to evaluate the effectiveness of scoliosis-specific exercises compared with other non-surgical interventions for adolescent with idiopathic scoliosis. Studies were eligible if they were randomised controlled trials evaluating scoliosis-specific exercises in participants with idiopathic scoliosis (defined as a primary Cobb angle of at least 10 degrees) and aged between 10 years and skeletal maturity. Scoliosis-specific exercises were defined 'specific movements performed with a therapeutic aim of reducing the deformity.' Comparators were non-surgical interventions, including bracing, electrical stimulation, manual therapy, generalised exercise, sports, active recreational activities, advice or waiting list. Primary outcomes were Cobb angle (in degrees) and angle of trunk rotation.

The review identified 9 studies (480 participants) that were conducted in Egypt, Brazil, Italy, Turkey, Korea, China, and Canada. There was variability in terms of the exercise parameters prescribed across studies. Treatment duration ranged from 3 weeks to 42 months.

Compared to general exercise or standard care, there was very low quality evidence that scoliosis-specific exercises reduced the thoracic Cobb angle (3 studies, 125 participants, mean difference -7 degrees,95% confidence interval (CI) -9 to -5), lumbar Cobb angle (2 studies, 105 participants, mean difference -7 degrees, 95% CI -10 to -4), and main curve location (3 studies, 172 participants, mean difference -5

degrees, 95% CI -9 to -1). Compared to general exercises or standard care, there was very low quality evidence that scoliosis-specific exercises did not reduce the angle of trunk rotation (1 study, 25 participants, mean difference -1 degrees,95% CI -3 to 5).

Very low quality evidence supports the use of scoliosis-specific exercise rather than standard care or other types of exercise for patients with adolescent idiopathic scoliosis to reduce spinal curvature. Large-scale and rigorous randomised controlled trials are required to evaluate the effectiveness and cost-effectiveness of scoliosis-specific exercise.

Thompson JY, et al. Effectiveness of scoliosis-specific exercises for adolescent idiopathic scoliosis compared with other non-surgical interventions: a systematic review and meta-analysis. *Physiotherapy*;105(2):214-34

Read more on PEDro.

L. Next PEDro update (August 2019)

The next PEDro update is on Monday 5 August 2019.

Proudly supported by

AUSTRALIAN PHYSIOTHERAPY ASSOCIATION

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