PEDro Newsletter 10 October 2022

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PEDro

Physiotherapy Evidence Database

A. New podcast about PEDro!

Collaborators in Brazil have just launched a new podcast series called 'PhysioFrontiers', with sponsorship from Fisio em Ortopedia. PhysioFrontiers is a monthly podcast in Portuguese that aims to close the gap between research and clinical practice. Hosted by Bruno Saragiotto and Tie Yamato, the researcher-clinician guests will discuss evidence-based practice and their careers. The interviews will often be in Portuguese or English. The first episode features PEDro co-founder Anne Moseley.

Access the podcast at: https://fisioemortopedia.podlink.to/frontiers1

B. #PEDroTacklesBarriers to evidence-based physiotherapy: statistical skills

The '#PEDroTacklesBarriers to evidence-based physiotherapy' campaign will help you to tackle the four biggest barriers to evidence-based physiotherapy – lack of time, language, lack of access, and lack of statistical skills.

If you are new to the campaign, we suggest that you start at the beginning by looking at earlier posts on strategies to tackle the barriers of lack of time and language. These are

available on the campaign webpage, blog, Twitter (@PEDro_database) or Facebook (@PhysiotherapyEvidenceDatabase.PEDro).

Over the next months, we discuss strategies to tackle the barrier of statistical skills in evidence-based physiotherapy. A lack of statistical skills is a common barrier to interpreting evidence and implementing evidence-based physiotherapy.

This month, three clinician-researchers including the Scientific Editor of the *Journal of Physiotherapy*, tackle the barrier of lack of statistical skills by discussing the methods used to conduct, analyse, report, and interpret randomised controlled trials.

Aidan Cashin
Exercise Physiologist and researcher, University of New South Wales, Australia

Area of practice: Comparative effectiveness of interventions for people with chronic pain

Kate Scrivener
Physiotherapist, educator and researcher, Macquarie University, Australia

Area of practice: Post-stroke physiotherapy intervention and research.

Mark Elkins
Scientific Editor of *Journal of Physiotherapy*

Area of practice: Physical and pharmacological therapies in respiratory disease and improving the understanding and application of published research by clinicians.

Interpreting comparative effects in trials
High-quality randomised controlled trials are a great source of evidence to support clinical decisions about which treatment may be best for the patients you work with. When interpreting the findings from trials, it is important to consider both how the outcomes are reported and what the treatment is being compared to.

Trial outcomes are often measured and reported as the 'within-group' change in outcomes or as the 'between-group' difference in outcomes. The distinction between within-group comparison and between-group comparison is critical when interpreting the results of trials. The between-group difference represents the treatment effect because it does not include natural history, regression to the mean, and nonspecific effects of receiving care which are included in the within-group change.

The treatment effect in trials is always comparative, meaning that the treatment benefit (or harm) is interpreted relative to the other treatment(s) in the trial. This is an important issue because the choice of comparison group will have a big influence on the interpretation of the size of the effect and whether the comparison was a fair test of the treatment.

Choosing the ideal comparison group is not straightforward and is heavily influenced by the research question (spanning the spectrum of efficacy to effectiveness research). For example, guideline-based care may be a suitable comparator if researchers were interested in investigating if the treatment was better than current practice.

The choice of comparison group is also important when trials are synthesised in systematic reviews. It is important that meta-analyses of systematic reviews combine trials with similar treatments, and trials that have similar comparison groups.

C. PEDro update (10 October 2022)

PEDro contains 56,512 records. In the 10 October 2022 update you will find:

- 43,147 Reports of randomised controlled trials (42,298 of these trials have confirmed ratings of methodological quality using the PEDro scale)
- 12,637 reports of systematic reviews, and

- 728 reports of evidence-based clinical practice guidelines.

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

D. DiTA update (10 October 2022)

DiTA contains 2,386 records. In the 10 October 2022 update you will find:

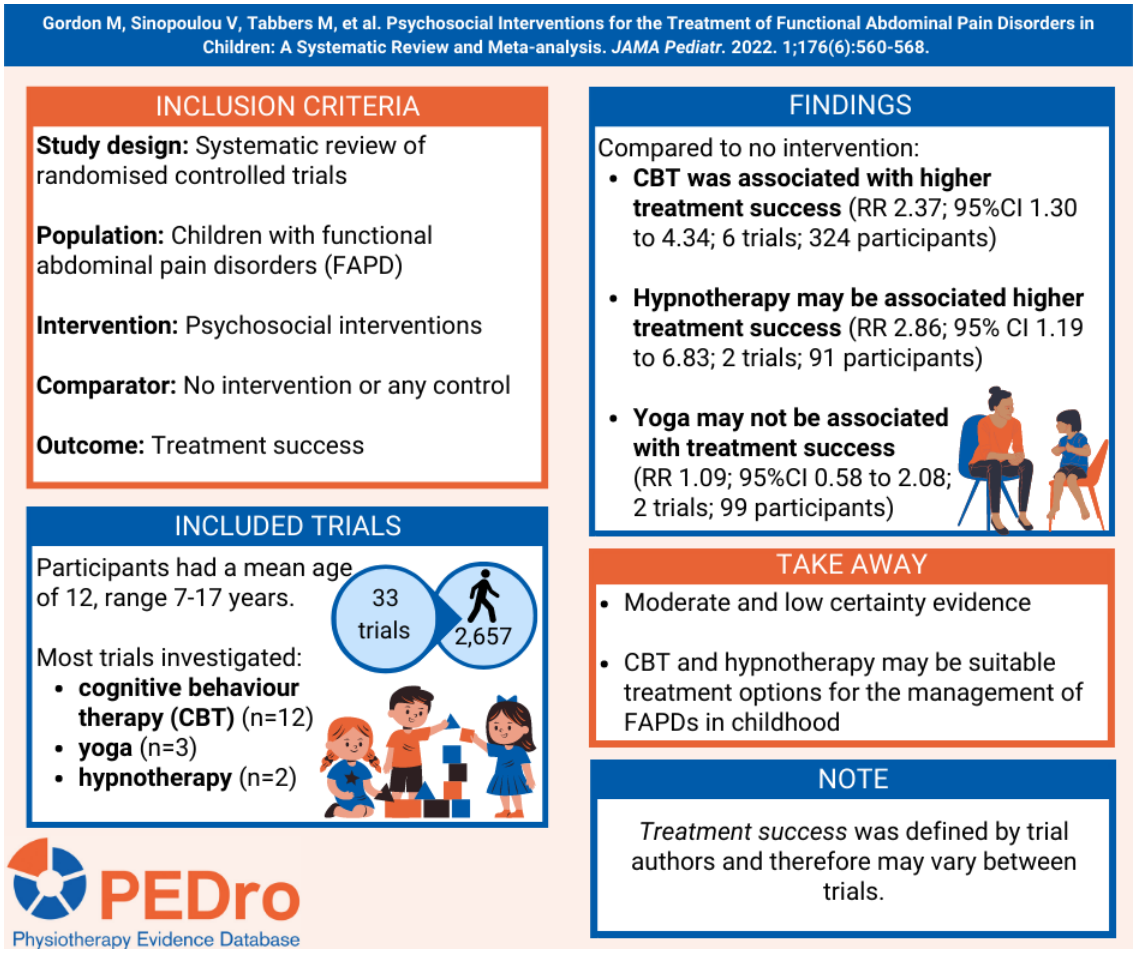
- 2,134 reports of primary studies, and
- 252 reports of systematic reviews.

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

E. Infographic for systematic review found that cognitive behavioural therapy and hypnotherapy are associated with higher treatment success compared to no intervention for children with functional abdominal pain disorders.

Last month we summarised the systematic review by Gordon et al 2022. The review concluded that CBT and hypnotherapy may be suitable treatment options for the management of functional abdominal pain disorders in childhood, compared to no intervention. The certainty of the evidence was rated moderate and low.

Some findings are included in this infographic.



Gordon M, Sinopoulou V, Tabbers M, et al. Psychosocial Interventions for the Treatment of Functional Abdominal Pain Disorders in Children: A Systematic Review and Meta-analysis. *JAMA Pediatr*. 2022. 1;176(6):560-568. doi: 10.1001/jamapediatrics.2022.0313.

F. Systematic review found that standalone gamified smartphone apps have a small-to-moderate effect on increasing physical activity levels in people of all health statuses and ages

Many people do not meet the recommended levels of physical activity. Strategies are needed to improve motivation for increasing and sustaining physical activity levels. Gamification of smartphone apps involves using game design elements including storytelling, avatars, collection of points and mastery of challenges which aim to increase intrinsic motivation of behaviours, such as physical activity. This systematic review aimed to estimate the effects of standalone gamified smartphone app-delivered interventions compared to a control group (for randomised controlled trials (RCTs)) or pre-post measures (for single-group studies) on physical activity in people of any age and any health status.

Guided by a registered protocol, 5 databases (including Web of Science, Scopus and

PubMed) were used to search for RCTs and pre-post single-group studies published in English between 2008 (when literature on gamification was first published) to August 31st 2021. Eligible studies included participants of any age and health status. The interventions were gamified smartphone apps for physical activity that did not involve additional interventions or support. For RCTs, comparator groups varied and included usual care/waitlist control, diet, physical activity trackers (e.g., Calorific, Fitbit), apps (e.g., WeChat Sports) or lifestyle counselling. Indicators of physical activity was the outcome of interest (e.g., moderate-to-vigorous physical activity, step counts). Studies involving exergames, video games or serious games were excluded.

Title, abstract, and full-text screening for eligibility, and data extraction were performed by two authors independently, with disagreements resolved by a third author. The Cochrane Risk of Bias (RoB-2) and the Risk of Bias in Non-randomised Studies of Interventions (ROBINS-I) tools were used to assess the methodological quality of RCTs and single-group studies, respectively. A meta-analysis pooled the trials using standardised mean differences (SMD, based on Hedge's g) to summarise and compare between-group (RCTs only) and within-group differences (pre-post measures of all intervention groups). A meta-regression was performed for sex (% female) and intervention duration. Subgroup analyses explored the effect of study population, age group, study design, physical activity measures (subjective/objective) and type of comparator on indicators of physical activity. Sensitivity analyses were conducted to investigate the effect of heterogeneity and risk of bias on the meta-analysis. Evidence quality was evaluated using the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach.

Nineteen studies, 17 RCTs and 2 pre-post single-group studies, involving 1,908 participants were included in the systematic review. Fifteen studies included adults and 17 studies were based on healthy cohorts. Commonly used gamification features were in-game rewards, virtual teams, points/scores and leader boards/rankings. Social support, behaviour comparison, and imaginary rewards were the most frequently implemented behaviour change techniques. The intervention duration was a median of seven weeks (range 1-24 weeks). Thirteen studies measured physical activity objectively, 2 used questionnaires and 4 used combined methods. 15 studies were rated as having 'some concerns' in terms of study quality which was due to deviations from the intended interventions and outcome measurement.

Sixteen studies were included in the meta-analysis. In between-group comparisons, moderate level evidence demonstrated small-to-moderate size effects supporting the use of apps to increase physical activity (n=12 apps, SMD 0.34; 95% CI 0.06 to 0.62, I2=72%). In within-group comparisons, very low level evidence demonstrated small-to-moderate size effects supporting the use of apps to increase physical activity (n=18 apps, SMD 0.38; 95% CI 0.17 to 0.59, I2=74%). Only in the between-group comparisons, both increased intervention duration (n=12 apps, SMD 0.05; 95% CI 0.01, 0.08) and being male (n=12, SMD -0.01 [female]; 95% CI -0.02 to -0.00) had a small but significant modifying effect on the

intervention. Between-group subgroup analyses showed larger effects for patients (SMD 1.63; 95% CI -0.5, 3.31) compared to healthy populations (SMD 0.18; 95% CI 0.0 to 0.35). In within-group subgroup analyses, there was a moderate-to-large effect of apps on step counts (n=8, SMD 0.69; 95% CI 0.24 to 1.15), but small-to-moderate effect on moderate-to-vigorous physical activity (n=10, SMD 0.18; 95% CI 0.05 to 0.31).

Very low to moderate level evidence suggests that standalone gamified smartphone apps have small-to-moderate positive effects on physical activity levels in people of all health statuses and ages, compared to usual care/waitlist control, diet, physical activity trackers, non-gamified apps or lifestyle counselling. Findings support the use of digital health technologies to improve physical activity. Future research is required to determine which intervention features are effective in maintaining behaviour change.

Yang Y, Hu H, Koenigstorfer J. Effects of Gamified Smartphone Applications on Physical Activity: A Systematic Review and Meta-Analysis. *Am J Prev Med.* 2022 Apr;62(4):602-613. doi: 10.1016/j.amepre.2021.10.005. Epub 2021 Dec 7. PMID: 34893387.

Read more on PEDro.

G. Support for PEDro comes from the following global physiotherapy organisation

We thank Association Luxembourgeoise Des Kinésithérapeutes who have just renewed their partnership with PEDro for another year.

H. *Evidence in your inbox*

PEDro keeps you up to date. Sign up to receive personalised evidence sent straight to your email inbox: https://pedro.org.au/english/browse/evidence-in-your-inbox/

I. Next PEDro and DiTA updates (November 2022)

The next PEDro and DiTA updates are on 7 November 2022.

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