A. PEDro Top 5 Trials from 2014-2019 announced!

To celebrate PEDro's 20th birthday we have identified the five most important randomised controlled trials in physiotherapy published in the years 2014-2019. The trials were nominated by PEDro users, and an independent panel of international trialists judged the nominations received.

We are excited to announce the PEDro Top 5 Trials! These ground-breaking trials are from a broad cross-section of physiotherapy practice. The trials answer important clinical questions that will change the way people are treated for a variety of conditions seen by physiotherapists and other healthcare professionals. All of them mark important milestones in the evolution of physiotherapy treatment.

The trials are listed below in no particular order. We have produced short videos to summarise each trial.


Preoperative physiotherapy for the prevention of respiratory complications after upper abdominal surgery: pragmatic, double blinded, multicentre randomised controlled trial

Boden I, Skinner EH, Browning L, Reeve J, Anderson L, Hill C, Robertson IK, Story D, Denehy L
BMJ 2018 Jan 24;360:j5916

[Exercises to improve function of the rheumatoid hand (SARAH): a randomised controlled trial](#)

Lamb SE, Williamson EM, Heine PJ, Adams J, Dosanjh S, Dritsaki M, Glover MJ, Lord J, McConkey C, Nichols V, Rahman A, Underwood M, Williams MA, on behalf of the Strengthening and Stretching for Rheumatoid Arthritis of the Hand Trial (SARAH) Trial Team
Lancet 2015 Jan 31;385(9966):421-429
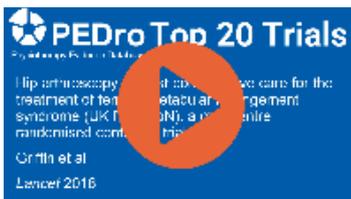
[Hip arthroscopy versus best conservative care for the treatment of femoroacetabular impingement syndrome (UK FASHIoN): a multicentre randomised controlled trial](#)

Griffin DR, Dickenson EJ, Wall PDH, Achana F, Donovan JL, Griffin J, Hobson R, Hutchinson CE, Jepson M, Parsons NR, Petrou S, Realpe A, Smith J, Foster NE, on behalf of the FASHIoN Study Group
Lancet 2018 Jun 2;391(10136):2225-2235

[Effect of inpatient rehabilitation versus a monitored home-based program on mobility in patients with total knee arthroplasty: the HIHO randomized clinical trial](#)

Buhagiar MA, Naylor JM, Harris IA, Xuan W, Kohler F, Wright R, Fortunato R
JAMA 2017 Mar 14;317(10):1037-1046

[Efficacy and safety of very early mobilisation within 24 h of stroke onset (AVERT): a randomised controlled trial](#)

The AVERT Trial Collaboration group
Lancet 2015 Jul 4;386(9988):46-55

You will be hearing more about these trials over the coming months, including podcasts with the lead authors produced by [PT Pintcast](#).

Congratulations to the teams who produced the PEDro Top 5 Trials. Your contributions to

physiotherapy are highly valued and appreciated. PEDro would also like to thank all the users who nominated trials and those who served on the independent judging panel.

B. PEDro update (4 November 2019)

PEDro contains 45,191 records. In the 4 November 2019 update you will find:

- 35,285 reports of randomised controlled trials (34,489 of these trials have confirmed ratings of methodological quality using the PEDro scale)
- 9,242 reports of systematic reviews, and
- 664 reports of evidence-based clinical practice guidelines.

PEDro was updated on 4 November 2019. For latest guidelines, reviews and trials in physiotherapy visit *Evidence in your inbox*.

C. PEDro indexes 45,000+ reports

We are pleased to announce that PEDro has just achieved a new milestone for the amount of evidence. There are now 45,000+ reports of trials, reviews and guidelines indexed on PEDro.

45,000+
randomised trials, systematic reviews and clinical practice guidelines in physiotherapy on PEDro

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D. #MyPTArticleOfTheMonth – how to use a diagnostic test accuracy paper

Last month we explained the logic of studies of diagnostic test accuracy. Studies of diagnostic test accuracy involve comparing the findings of the index test to a reference

test. The degree of concordance of the findings of the index and reference tests provides a measure of the accuracy of the index test.

How can the accuracy of a diagnostic test be quantified? Somehow we have to come up with some numbers that say something about the concordance between the findings of the index test and the reference test. This task is easiest when each of the index test and the reference test can generate just one of two findings: a positive finding or a negative finding. Here we will restrict consideration to these sorts of tests, as they are the most common sorts of diagnostic tests. We say the test is positive when its findings suggest the person who was tested has the condition of interest, and we say the test is negative when its findings suggest the person who was tested does not have the condition of interest.

The most frequently reported measures of diagnostic test accuracy are sensitivity and specificity. Sensitivity is the probability that a person who has the condition of interest will test positive. We can estimate sensitivity by first identifying all of the people in the study who tested positive to the reference test (i.e., the people who really do have the condition of interest) and then calculating the proportion of these people who tested positive with the index test. Specificity is the probability that a person who does not have the condition of interest will test negative. We can estimate specificity by identifying all of the people in the study who tested negative with the reference test (the people who really do not have the condition of interest) and then calculating the proportion of these people who tested negative with the index test.

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

E. #MyPTArticleOfTheMonth – what is Mireille Landry reading?

Mireille Landry has a BScPT from Queen's University, an MSc from the University of Toronto, a Diploma in Sport Physiotherapy from Sport Physiotherapy Canada, and is a Registered International Sports Physical Therapist through the International Federation of Sports Physical Therapy. She has broad clinical expertise in cardiorespiratory, musculoskeletal and exercise physiotherapy in acute care, private practice and ambulatory care settings. As an Academic Lead in the Department of Physical Therapy at the University of Toronto, Mireille is involved in student teaching in various capacities and across units in the curriculum. She enjoys splitting her time between teaching, clinical care, and providing physiotherapy support and on-field management for sporting events. Mireille has travelled and worked at many national and major games

supporting amateur athletes, including the 2016 Paralympic Games in Rio de Janeiro, Brazil.

Mireille has recently read two articles to inform her teaching and clinical work.

[Oldham JR, et al. Efficacy of tandem gait to identify impaired postural control after concussion. *Med Sci Sports Exerc* 2018;50(6):1162-8](#).

This study evaluated the diagnostic test accuracy and minimal detectable change of three field tests for concussion: the Tandem Gait Test, Balance Error Scoring System, and Modified Balance Error Scoring System. 76 National Collegiate Athletic Association student athletes, 38 acutely after concussion and 38 controls, were evaluated at two time points using the field tests and the reference standard for concussion evaluation (Concussion Assessment, Research, and Education Consortium Clinical Study Core Protocol). The Tandem Gait Test had higher sensitivity and specificity than both the Balance Error Scoring System and Modified Balance Error Scoring System. Tandem Gait Test time increased after concussion, but there was no difference in the number of errors recorded for the Balance Error Scoring System and Modified Balance Error Scoring System. Mireille says: "this study is interesting as the field tests were assessed at baseline and acutely after concussion, so we can determine how a concussion affects performance on each of the tasks. The results are useful for physiotherapy as, in addition to being more accurate than the other field tests, the Tandem Gait Test is easier to administer. It's important to note that the Tandem Gait Test was performed in a quiet environment within 48 hours of the concussion, so we can't extrapolate the results to a sideline concussion assessment."

[Esculier J-F, et al. Is combining gait retraining or an exercise programme with education better than education alone in treating runners with patellofemoral pain? A randomised clinical trial. *Br J Sports Med* 2018;52(10):659-66](#)

Recreational running is a popular activity and patellofemoral pain is among the most common reasons why runners seek physiotherapy management. This randomised controlled trial compared three 8-week rehabilitation programs on symptoms and functional limitations of recreational runners with patellofemoral pain. All groups received education on symptom management and training modifications. One group received the education program alone (education), the second received an exercise program in addition to education (exercises), and the third received gait retraining in addition to education (retraining). The trial was well-designed and -reported, scoring 8/10 on the PEDro scale. There were not between-group differences for the primary outcome (Knee Outcome Survey of the Activities of Daily Living Scale) after the intervention – the mean difference between the education and exercise group was 0.7 (95% confidence interval -6.0 to 7.4)

and the mean difference between the education and retraining group was -3.4 (-10.4 to 3.5). Mireille says: "adding exercises or gait retraining did not provide additional benefits compared to education alone. Empowering runners with self-management strategies on symptoms and training loads should be a priority of treatment in runners with patellofemoral pain syndrome."

F. Confidence intervals give the reader critical information about the precision of an effect estimate reported in a trial

The *Journal of Orthopaedic and Sports Physical Therapy* publish a regular feature called "evidence in practice". The latest evidence in practice article provides a great overview of confidence intervals.

Confidence intervals span a range of values above and below an effect estimate. The confidence interval is the range of effects that will most likely contain the true mean effect of treatment, compared to the control. The reader can be confident about the size of the mean effect of treatment when the confidence interval is narrow, but unsure when the confidence interval is wide.

The concept of minimal clinically important difference is also relevant when interpreting confidence intervals. If the confidence interval includes the minimal clinically important difference, it is possible that the treatment does not have a worthwhile benefit, regardless of the size of the effect estimate. When a confidence interval crosses the line of no effect (ie, contains the value of zero when assessing between-group differences), it is possible that the treatment is not more effective than the control. The article includes a graphic for interpretting confidence intervals based on their location with respect to the minimal clinically important difference and line of no effect.

Kamper SJ. Confidence intervals: linking evidence to practice. *J Orthop Sports Phys Ther* 2019;49(10): 763-4

G. Infographic for systematic review that found that interventions using activity trackers improve physical activity levels and mobility among older people

A recent systematic review of 23 randomised controlled trials found that interventions using activity trackers increased physical activity in older people by an average of 1,558 steps per day

How should activity trackers be used with older people?

Worthwhile for healthy older people and those with clinical conditions.

To maximise the benefit, wear the activity tracker for more than 12 weeks.

Since the benefit of activity trackers is not sustained long-term, consider other strategies to motivate patients to continue being physically active. Some strategies include:

- modifying the exercise program, type of exercise performed, and exercise setting
- setting and re-setting daily step goals
- tracking performance in a diary or online

CITATION: 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

Last month we summarised the [Oliveira et al systematic review](#). The review concluded that interventions using activity trackers improve physical activity levels and mobility among older people.

Some suggestions for using activity trackers with older people are in this infographic.

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](#).

H. Systematic review found that exercise reduces cancer-related fatigue

This systematic review of individual patient data investigated the effects of exercise on cancer-related fatigue and moderators of exercise interventions. Randomised controlled

trials in the Predicting OptimaL cAncer Rehabilitation and Supportive care (POLARIS) database were included in the review if they reported fatigue outcomes. All principal investigators from the trials in the POLARIS database provided individual patient data under a data sharing agreement. The methodological quality of each trial was assessed using the Cochrane risk of bias tool. The main outcome was fatigue after completion of the exercise intervention measured using any scale. Potential moderators of treatment effect were based on previous trials and meta-regression analyses and included age, sex, marital status, education level, body mass index, cancer type, treatment type (surgery, chemotherapy, radiotherapy, hormone therapy), and presence of distant metastases. Characteristics of the exercise programs, including frequency, intensity, type, supervision, session time and volume, were also explored as moderators.

Thirty-one trials (n = 4,366 participants) were included. Of these, 2,437 participants were randomised to an exercise intervention group, and 1,929 to a control group. All trials were conducted in high-income countries, including the Netherlands, United States, Australia, Canada, Germany, United Kingdom and Norway.

Exercise reduced fatigue compared to control (effect size -0.17; 95% confidence interval (CI) -0.22 to -0.12). None of the demographic or clinical characteristics of individual participants moderated the effects of the intervention on fatigue. Compared to control, supervised exercise had larger effects on fatigue than unsupervised exercise interventions (effect size -0.18; 95% CI -0.28 to -0.08). Within supervised interventions, those with a duration of up to 12 weeks showed the larger effects (effect size -0.29; 95% CI -0.39 to -0.20) than those with a duration longer than 24 weeks (effect size -0.11; 95% CI -0.22 to 0.00). No other exercise-related characteristics were identified as moderators of supervised exercise interventions. Within unsupervised interventions, neither duration nor exercise-related characteristics moderated the effect of exercise interventions on fatigue.

Exercise interventions reduce fatigue across all subgroups of patients and types of cancer, supporting a role for exercise in clinical practice for people with cancer. The strongest effects on fatigue were noted in supervised exercise interventions with a duration of up to 12 weeks.

van Vulpen JK et al. Moderators of exercise effects on cancer-related fatigue: a meta-analysis of individual patient data. *Med Sci Sports Exerc* 2019 Sep 12:Epub ahead of print.

Read more on [PEDro](.).

I. Rana Hinman wins PEDro prize for the best trial presented at TRANSFORM2019 Physiotherapy Conference

The PEDro prize was awarded to the person who presents the best report of a randomised controlled trial at the [TRANSFORM2019 Physiotherapy Conference](#). The award recognises the achievements of researchers who conduct high quality, clinically important randomised controlled trials. To be eligible, the presentation must have been a primary report for a completed randomised controlled trial that evaluates the effects of a physiotherapy intervention. Judging was carried out by a panel, with scoring based on quality (risk of bias, size, design and analysis of the trial) as well as significance (importance of the findings for clinical practice).

The TRANSFORM2019 winner of the PEDro prize was Rana Hinman, from the University of Melbourne, for her presentation titled "Telephone-delivered exercise advice and behaviour change support by physiotherapists for people with knee osteoarthritis: the TELECARE pragmatic randomised controlled trial."

In the trial, 175 people with chronic knee pain due to osteoarthritis were recruited across Australia and randomised to an existing nurse led telephone service (n = 88) or exercise advice and support from a physiotherapist via telephone (n = 87). The existing service group received one telephone consultation with a nurse for self-management advice. The exercise advice and support group also received 5-10 telephone consultations with a physiotherapist trained in behaviour change for a personalised strengthening program and physical activity plan. Primary outcomes were overall average knee pain (range 0-10) and difficulty with physical function (0-68) at 6 months (primary time-point) and 12 months (secondary time-point). At 6 months, the exercise advice and support group reported greater improvement in function (mean difference 4.7 units (95% confidence interval 1.0 to 8.4)) but not overall pain (0.7 units (0.0 to 1.4)) than the existing service group. By 12 months, most outcomes were similar between groups.

The trial concluded that incorporating physiotherapist-led exercise advice and support into an existing telephone service resulted in modest improvements in physical function at 6 months. This is encouraging for the many Australians with knee osteoarthritis, who may be unable to access face to face physiotherapy because they live in rural or remote settings.

The results of the trial will be published soon, and we are looking forward to indexing this article in PEDro. The [protocol](#) and [registration](#) provide some more information about the trial.

Pictured is Professor Rana Hinman presenting her trial at the TRANSFORM2019 Physiotherapy Conference.

J. Next PEDro update (December 2019)

The next PEDro update is on Monday 2 December 2019.

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