



# Implementing the Physically Active Children in Education (PACE) program optimally and sustainably

## Issue

### What we know so far

- In four initial studies, our researchers found PACE to be effective, feasible and scalable across multiple local health districts (LHDs). When our researchers tested the PACE program in 100 schools (government, Catholic and independent schools) across three LHDs (Hunter New England, Mid-North Coast and Central Coast) over a 12-month period, teachers rated the program highly acceptable.
- Teachers significantly increased their scheduling of total physical activity across the school week by 26.77 minutes, increased their scheduling of energisers (in-class activity breaks) by 20.55 minutes and integrated lessons by 4.60 minutes.
- The mean cost to deliver the program per school was \$1047.

The program can be implemented at scale in a highly feasible and acceptable way and successfully supports teachers to increase their scheduling of physical activity in line with current policy requirements.

### How this research program will help

Given the scalable and ongoing benefits of PACE, we are focussing now on extending and improving the program, while considering how to reduce associated costs and resources, and working to move the program into routine service delivery.

- We will design and test a support strategy that is less resource intensive, low in cost, and feasible to deliver at scale, while maintaining its positive impact on teachers' scheduling of physical activity. This may include discarding strategies with low acceptability and adherence or replacing the more expensive face-to-face components with low-cost online alternatives.
- To improve sustainability, we will develop and assess the effectiveness of additional strategies to support schools to sustain their delivery of physical activity over the long term.
- We will focus on encouraging other local health districts to incorporate PACE. This may involve us adapting PACE to ensure it is appropriate for other contexts while maintaining its key components and positive impacts.
- Pilot, efficacy and scale studies indicate the greatest impact of PACE is on teachers' scheduling of energisers. These short 5 to 10-minute bouts of classroom activity require limited resources and no specialised training by teachers. We will refine the focus of PACE to emphasise the benefit of energisers and provide teachers with additional resources and support to do so. A greater focus on energisers could further improve the impact of PACE.

This research program will provide policy makers and practitioners with a school-based physical activity intervention that is effective and feasible to implement at scale and which is sustainable over the long term.



## How we are conducting this research

- A 12-month cluster-randomised controlled non-inferiority trial involving 80 schools in the Hunter New England region to test if an online version of PACE developed as part of Stage 2 Optimisation is as effective as the current model of PACE evaluated as part of Stage 1 optimisation.
- A 12-month cluster-randomised controlled trial involving 61 schools in the Hunter New England region to test whether a multicomponent sustainability support program is effective in sustaining teachers' delivery of physical activity to their students.

## Timeline

Task	Date	Progress
Stage 2 optimisation trial	2021-2022	In planning
Sustainability trial	2022	Will commence after Phase 2 trial is completed

## Partners

Hunter New England Local Health District, Central Coast Local Health District, Mid North Coast Local Health District.

## About us

This research is being conducted by researchers at the National Centre of Implementation Science (NCOIS), an NHMRC funded Centre for Research Excellence associated with the University of Newcastle. The research is led by Dr Nicole Nathan and supported by Dr Alix Ivers, Dr Beatrice Murawski, Dr Nicole McCarthy and will form part of PhD projects by Ms Cassandra Lane and Mr Adam Shoesmith.

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## Background

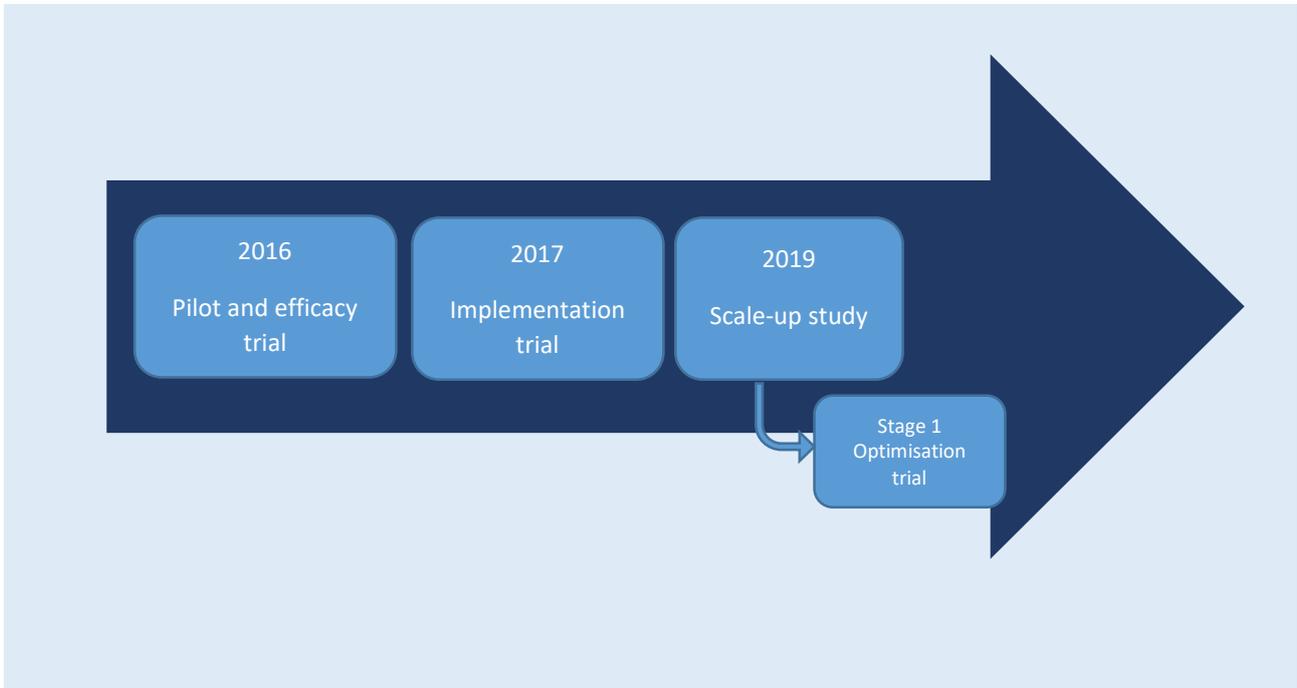
### About the PACE program

The PACE program was designed using the Theoretical Domains Framework and Behaviour Change Wheel. Implementation strategies were selected to address barriers and facilitators previously identified as having an impact on teachers' scheduling of physical activity. The strategies were based on extensive formative research, including work from previous trials and surveys with teachers and principals. The intervention was co-designed with an advisory group consisting of experts in physical activity, education, implementation science and policy.



## Previous trials

Our initial studies have found PACE to be effective, feasible and scalable across multiple LHDs.



**Diagram:** PACE Study stages to date

### Study 1: Pilot and efficacy trial

In 2016, we conducted a randomised controlled trial in 12 Catholic primary schools in the Hunter New England Local Health District, NSW. We found significantly more teachers in the intervention group scheduled the recommended 150 minutes of weekly physical activity and scheduled 36.6 more minutes of physical activity per week than controls. Students engaged in 3 minutes more moderate-to-vigorous activity per day, 3.3 minutes more moderate-to-vigorous activity during class and 2.1 minutes less sedentary time.

### Study 2: Implementation/effectiveness trial

In 2017, we conducted a cluster randomised controlled trial in 61 government and Catholic primary schools in the Hunter New England Local Health District, NSW. This was a 12-month multi-strategy intervention. Our implementation strategies were modified based on data from the first trial and feedback from service delivery staff. Weekly minutes of structured physical activity implemented by classroom teachers was measured via teacher completion of a daily logbook at baseline (October-December 2017), 12-month (October-December 2018) and 18-month (April-June 2019). We found the proportion of teachers scheduling 150 minutes of physical activity increased, from baseline to follow-up, significantly more in schools who received PACE, compared to those who didn't. We also found that teachers who received PACE increased their scheduling of physical activity, from baseline to follow-up, by 44.25 minutes more than the control group. There were only small and not significant differences in students' physical activity levels, and we found that girls increased their physical activity more than boys.



### **Study 3: Scale up study**

In 2018-2019, we conducted an uncontrolled before and after study to evaluate the scale-up of the PACE program in 100 schools across three Local Health Districts in NSW (Hunter New England, Mid-North Coast and Central Coast) over a 12-month period. Implementation strategies were slightly modified based on data from studies 1 and 2, and feedback from service delivery staff.

Project officer records detailed information on the number of schools exposed to PACE, the number of schools who adhered to the components of PACE and the costs and resources associated with the delivery of PACE. Principals and teachers completed self-report surveys at baseline and follow-up, which assessed their views on the uptake of PACE. Teacher surveys also recorded acceptability of PACE and the number of minutes they scheduled physical activity across the school week according to five categories: total physical activity, energisers, physical education (PE), sport and integrated lessons.

We found that all components were successfully delivered to the 100 schools that received PACE. Over half adhered to 11 of the 13 components of the program. Teachers rated acceptability of the program components highly. Teachers significantly increased their scheduling of total physical activity across the school week by 26.77 minutes and scheduling of energisers by 20.55 minutes and integrated lessons by 4.60 minutes. The mean cost to deliver the program per school was \$1047.

### **Study 4: Stage 1 Optimisation trial**

With 48 of the schools from the scale-up study (study 3), we tested different ways of delivering the PACE program that will help us to reach more schools at a lower cost. We decided on the best modifications to use by reviewing data from studies 1 and 2, feedback from service delivery staff, literature reviews, the costs involved, and decisions made by the program advisory group.

We randomly assigned the schools to two groups. We gave one of the groups the PACE program as delivered in study 3 (this was the control group) and we gave the other group a modified version of PACE. In the modified version, technical support was delivered over the phone or via email rather than in person, and training of teachers was done by in-school champions rather than by service delivery staff.

We found a high likelihood (97.4% probability) that the modified version is just as effective as the control version.



**PACE implementation strategies**

Study 1 (pilot and efficacy)	Studies 2 and 3 (implementation/effectiveness and scale up)	Study 4 (Stage 1 Optimisation)
<b>Centralised technical support</b> Project officers (teacher and employee of LHD) provide support to each school using email, telephone or face-to-face	✓	X Delivered by e-mail and telephone only
<b>Mandate change</b> Project officers meet face-to-face with school executive(s) to engage them and confirm their commitment	✓	X Delivered by telephone only
<b>Identify and prepare champions</b> One day face-to-face training workshop for in-school champions	✓ <i>(Option for large schools to include 2 in-school champions)</i>	✓
<b>Implementation blueprint</b> In-school champions develop an action plan	✓ <i>(included if-then-what)</i>	✓
<b>Educational outreach visits</b> Project officers meet face-to-face with all teachers at each school	✓	X Delivered by in-school champion(s)
<b>Develop and distribute educational materials</b> E.g. sample timetables	✓	✓
	<i>Additional strategy:</i> <b>Change physical structure and equipment</b> Each school provided with a PA pack (basic equipment)	✓