

# Evaluating a school community linked physical activity intervention programme: a multi-level analysis.



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## PURPOSE OF THE STUDY

The purpose of this study was to evaluate a multicomponent PA intervention programme delivered to pupils aged 7-12 years in three urban primary schools in the UK. The intervention was designed by local health agencies in partnership with the school district, which aimed to raise awareness of the importance of PA and increase PA levels.

## METHODS

### INTERVENTION:

- A matched-control study, involving one control (n=123) and three intervention (n=436) schools, was conducted over a seven month period.
- PA intervention programme was separated into two phases: (1) motivation DVD and 10 days of circuit based exercise sessions; (2) maintenance phase incorporating PA reward programme and use of specialist children's gym equipment in each school for a 4 wk period. Post intervention, children's exercise equipment was relocated to local community facilities.

### EVALUATION ANALYSIS:

- Implementation process was evaluated using a mediated-variable (Baranowski & Jago, 2005) and content, process and outcome (CPO) model (Fridrich et al., 2015) (see Fig. 1). Change process was considered through the Logic Model (W.K. Kellogg Foundation, 2001) (see Table 1). Questionnaires and semi-structured interviews addressed the fidelity of the programme in terms of process and context.
- Outcome measures assessed the children's physical fitness levels (FITNESSGRAM test battery), and attitudes towards physical activity (CATPA inventory; Schutz et al., 1985) pre- and post-intervention. A 7-day recall questionnaire (PAQ-C; Kowalski et al., 2004) was used to form a composite PA score to assess change in PA levels.

## RESULTS

- As shown in Table 2, both groups increased PA levels (p<0.05); however, no improvement was observed in the intervention group for attitudinal components or physical fitness (p>0.05), except improved trunk strength/flexibility (p=0.005). Control group improved some fitness parameters including cardiovascular fitness, strength and flexibility (p<0.05).

- Overall, pupils and teachers enjoyed the programme; however findings did not support intervention aims. The theory of behavioural change for PA was not explicit which led to unrealistic programme goals. Programme implementation was inconsistent, lacked teacher 'buy-in', and did not incorporate pedagogical underpinning.

## IMPLICATIONS

- Greater focus was needed between different phases of the intervention: preparation, implementation, and appropriation.
- In considering outcomes, stakeholders need to make explicit the mechanisms of change and how this will be assessed e.g. agency, advocacy, and self-confidence.
- The lack of improvement supports the importance of grounding PA interventions using appropriate learning models that conceive learning as a form of participation, rather than acquisition.
- PA intervention programmes need to be designed to facilitate greater engagement of family and community interaction which underpins the environmental context in which children engage in PA.

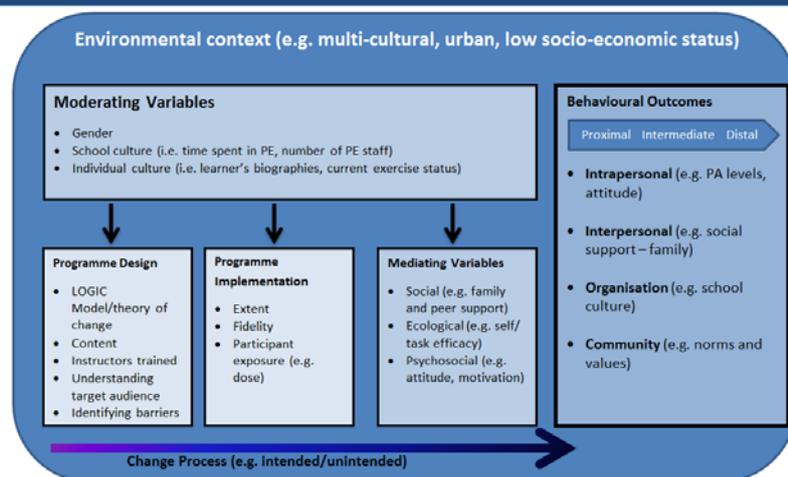


Figure 1. Contextual model to evaluate physical activity intervention program.

Table 1. Programme Logic Model

Underpinning Assumptions	Planned work – intended activities		Results – expectations		
	RESOURCES/INPUTS I.e., positive or negative factors influencing your ability to do your work	ACTIVITIES I.e., what is done with the resources	OUTPUTS I.e., the direct product of activities	OUTCOMES I.e., changes in participants due to program	IMPACT I.e., changes in organisations, communities or systems due to the programme
Primary, secondary and community health service providers have a role in combating obesity by educating pupils to increase PA levels					
Educating pupils about the benefits of PA will increase activity levels	<ul style="list-style-type: none"> <li>1 Health Trainer</li> <li>Local sporting role models and team mascot to motivate pupils</li> <li>Specialist pupils' gym equipment</li> <li>Program funding administered by local charitable organisation</li> </ul>	<ul style="list-style-type: none"> <li>Resource materials, DVD and score cards</li> <li>Deliver circuit training sessions</li> <li>School and community based access to specialised kids gym equipment</li> <li>Rewards programme</li> <li>Independent evaluation research commissioned</li> </ul>	<ul style="list-style-type: none"> <li>Increasing PA levels in pupils</li> <li>Improving pupils' awareness of the importance of PA, exercise intensity and the health benefits</li> <li>Increase pupils' overall fitness levels</li> </ul>	<ul style="list-style-type: none"> <li>Decrease BMI</li> <li>Increase positive attitudes towards PA</li> <li>Increase metabolic health</li> <li>Reduce obesity levels in young people</li> </ul>	<ul style="list-style-type: none"> <li>Engendering positive health behaviours in young people</li> <li>Formalising the linkages between school community linked interventions</li> </ul>
Schools provide a facility to engage pupils in PA					
Change is positive					

Table 2. Comparison of mean, standard deviation and P values of anthropometric, physical fitness, PAQ-C, and CATPA data by gender.\*

	Gender	N	Intervention Group			Control Group			
			Baseline	Follow-up	P	N	Baseline	Follow-up	P
<b>Anthropometric Data</b>									
Age (yr)	Boys	240	9.3 (1.2)	9.8 (1.2)	0.005*	66	9.5 (1.3)	10.0 (1.2)	0.005*
	Girls	231	9.3 (1.1)	9.8 (1.1)	0.005*	58	9.7 (1.1)	10.2 (1.1)	0.005*
Height (cm)	Boys	223	136.9 (9.2)	139.1 (9.3)*	0.005*	72	137.4 (6.9)	140.2 (7.4)*	0.005*
	Girls	216	136.2 (9.4)	138.5 (9.6)*	0.005*	55	139.2 (9.8)	141.8 (10.2)*	0.005*
Body mass (kg)	Boys	223	34.1 (9.2)	35.8 (9.7)*	0.005*	72	34.2 (7.8)	36.7 (8.3)*	0.005*
	Girls	216	34.5 (10.1)	36.2 (10.5)*	0.005*	55	36.2 (8.7)	38.4 (9.1)*	0.005*
BMI (kg·m <sup>-2</sup> )	Boys	223	18.0 (3.2)	18.3 (3.5)*	0.005*	72	18.0 (3.0)	18.6 (3.2)*	0.005*
	Girls	216	18.3 (3.5)	18.6 (3.5)*	0.005*	55	18.6 (3.1)	19.0 (3.0)*	0.005*
BMI percentile	Boys	223	64.1 (30.3)	64.5 (30.1)	0.495	72	63.2 (31.7)	66.8 (29.1)*	0.033*
	Girls	216	66.3 (30.7)	67.4 (30.1)	0.055	55	69.9 (30.1)	73.3 (27.2)*	0.082*
<b>Physical Fitness Data</b>									
VO <sub>2</sub> max (ml·kg <sup>-1</sup> ·min <sup>-1</sup> )	Boys	214	31.9 (17.1)	33.0 (17.7)	0.219	53	31.0 (16.4)	40.3 (19.1)	0.005*
	Girls	209	24.7 (11.8)	25.4 (12.8)	0.354	51	27.0 (12.3)	32.7 (15.6)	0.005*
Push-ups	Boys	175	8.0 (6.9)	7.7 (7.2)	0.260	52	4.8 (3.6)	6.6 (4.3)	0.005*
	Girls	169	5.1 (4.6)	5.2 (4.5)	0.438	35	4.8 (3.4)	5.5 (3.6)	0.117
Curl-ups	Boys	207	11.8 (9.1)	11.7 (8.8)	0.928	67	5.4 (4.6)	8.76 (5.3)	0.005*
	Girls	202	11.1 (8.3)	10.02 (8.5)	0.045*	49	5.3 (3.9)	8.43 (5.8)	0.002*
Trunk lift (in)	Boys	215	4.8 (1.6)	5.5 (1.6)	0.005*	64	4.3 (1.6)	5.1 (1.8)	0.001*
	Girls	214	5.6 (1.8)	6.1 (1.7)	0.005*	47	5.7 (1.6)	6.1 (1.6)	0.240
Sit and Reach Right (ins)	Boys	235	8.1 (2.4)	7.8 (2.5)	0.008	68	8.2 (1.8)	7.5 (2.3)	0.001*
	Girls	221	9.1 (2.3)	9.1 (2.3)	0.477	59	9.5 (2.2)	9.0 (2.3)	0.019*
Sit and Reach Left (ins)	Boys	236	7.9 (2.4)	7.8 (2.5)	0.401	68	7.5 (1.9)	7.6 (2.3)	0.940
	Girls	219	9.1 (2.4)	9.1 (2.3)	0.975	59	9.2 (2.1)	9.0 (2.3)	0.426

\*Wilcoxon signed rank was used to determine changes over time within groups.

## REFERENCES

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