

Where has All the Physical Education Gone? Results of a Generalist Primary Schools Teachers' Survey on Teaching Physical Education

Vicki Cowley, Michael J. Hamlin, and Michael Grimley

Abstract—Concerns about low levels of children's physical activity and motor skill development, prompted the Ministry of Education to trial a physical activity pilot project (PAPP) in 16 New Zealand primary schools. The project comprised professional development and training in physical education for lead teachers and introduced four physical activity coordinators to liaise with and increase physical activity opportunities in the pilot schools. A survey of generalist teachers (128 baseline, 155 post-intervention) from these schools looked at timetabled physical activity sessions and issues related to teaching physical education. The authors calculated means and standard deviations of data relating to timetabled PE sessions and used a one-way analysis of variance to determine significant differences. Results indicated time devoted to physical activity related subjects significantly increased over the course of the intervention. Teacher's reported improved confidence and competence, which resulted in an improvement in quality physical education delivered more often.

Keywords—children, physical education, primary school, teaching

I. INTRODUCTION

WE timetable our daily fitness session during the morning play break so that our literacy morning programme is not interrupted. The children get some fresh air and physical activity during this 20 minute play break, so they can come back into class to settle into our reading programme (Year 1, class teacher, urban primary school – verbal communication – 28 March 2011).

This statement reflects a sobering reality about the status physical education has in some classes and primary schools in New Zealand. In the above case, the classroom teacher views physical education as a time to “blow off a bit of steam” during a play break, so maximum time can be devoted to more valued academic subjects, such as reading and mathematics. What is happening today, where a curriculum area as important as physical education is being “left out” of the daily and weekly timetable in our schools? In New Zealand primary schools, we have generalist classroom teachers who teach all curriculum areas to their designated class. Physical Education as a subject is included in

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the Health and Physical Education Curriculum Statement [1] and is one of eight essential learning areas, along with English, mathematics, science, social studies, languages, technology and the arts. Within the parameters of the curriculum statements, each classroom teacher has the flexibility to decide upon the content to be delivered and time allocation for each curriculum area. Therein lies a significant problem for delivery of physical education. In the absence of government legislation specifying the time allocation of each curriculum subject, generalist teachers will prioritize the curriculum areas they have the resources and support for, and feel most confident, teaching [2].

Until 1987, physical education curriculum statements included a time stipulation. This dated back to the 1953 Primary School Syllabus for Physical Education [3], when a time requirement of two hours per week (including sports and games), was mandatory. However, with the introduction of the 1987 Physical Education Syllabus [4] and the corresponding 1999 Health and Physical Education Curriculum statement [5], this time requirement was deregulated and replaced by statements advocating regular or frequent physical activity and physical education. As a result, the frequency of timetabled physical education decreased [6] and more priority was given to literacy and numeracy [7] programmes. Increasing the amount of quality physical education in the early years of children's schooling is critical to children's abilities to develop and master fundamental movement skills and positive attitudes and behaviours towards physical activity.

The school environment plays an important part in providing all children with equitable access to physical activity opportunities, learning movement skills and helping them develop a commitment to lifelong physical activity. Physically active opportunities can be provided during curriculum physical education, or as part of other timetabled curriculum subjects, during morning play and lunchtime, and before and after school hours. School provides an environment where all children, regardless of their families' socioeconomic status, can engage in physical activity opportunities. If the school does not or cannot (perhaps because of giving priority to other subjects) provide these opportunities, the onus falls back on families and communities to do so – and, as a result, many children lose the opportunity to engage in physical activity.

In 2001, the Graham Report [8] voiced concerns about young people's physical activity levels and the quality of, and

access to, physical education and physical recreation opportunities for young New Zealanders, both at school and in the community. As a consequence, the government – through the Ministry of Education (MOE) and Sport and Recreation New Zealand (SPARC) – initiated the pilot primary school physical activity project (PAPP) in 2002. This project was designed to trial strategies and innovations aimed at improving opportunities for children to engage in physical activity.

The PAPP intervention – as established by the MOE and SPARC – involved 16 primary schools (one withdrew in the second year) in two regions (Christchurch and Auckland). The pilot was trialled over a two-year period. It aimed to increase the quality and quantity of children's physical activity and physical education. To achieve these objectives, physical activity coordinators (PACs) were each assigned to four geographically-clustered schools (in Christchurch, Lincoln, North Harbour and South Auckland) and lead generalist primary school teachers from each school were selected to take part in a professional development programme to improve their capabilities to develop and implement a quality physical education programme.

The purpose of the evaluation was to establish the factors that led to the successful implementation of the PAPP intervention, by investigating changes in the quality of physical education programmes, quality and quantity of physical activity opportunities available, attitudes towards and values expressed about physical activity, and the levels of physical activity undertaken by primary school children. To evaluate the quantity of physical activity opportunities, the evaluation investigated the effect of the PAPP intervention on the timetabled allocation of physical education, physical activity (daily exercise or "fitness") and sport by generalist teachers in each of the pilot schools. The evaluation included both qualitative (semi-structured interviews, non-participant observation) and quantitative (questionnaires, heart rate monitoring, motor skill survey) methods of gathering data.

II. METHOD

Primary schools in New Zealand applied to the MOE for the opportunity to be a part of this pilot project. Sixteen schools were selected in two regions, Christchurch and Auckland. Each school represented a different educational context: two schools were Kura Kaupapa Maori (Maori-language immersion schools); one was a religious school; and one an army base school. There was a mix of rural (5) and urban (11) schools, each reflecting the variable socio-economic status (decile ratings) of its community. There were five contributing (Years 1–6, age range 5–11 years), two intermediate (Years 7 and 8, age range 11–13 years), and nine full primary schools (Years 1–8, age range 5–13 years). One school withdrew after the first year.

Informed consent was obtained from the schools and participating teachers. All teachers (124 baseline, 155 post-intervention) in the 16 (15 post-intervention) pilot schools were given a questionnaire, designed and validated by Ross and Cowley [5], asking about the frequency and duration of student participation in physical education, sport and daily

physical activity (daily exercise) in timetabled time for a specific week. The number of periods in the school's total timetabled week was also surveyed, so the proportion of the school week devoted to those subjects involving physical activity could be determined. Teachers were asked to identify from a pre-tested list, the major issues for teaching physical education and sport in their school and answer open-ended questions about the PAPP intervention, specifying any additional concerns. The questionnaire was completed on two occasions (baseline 11 March 2003, and post-intervention 01 November 2004) and the schools' timetables were surveyed at the same time.

III. ANALYSIS

Means and standard deviations of data relating to timetabled physical education, sport, health education and daily fitness, were determined using a mixed-modelling procedure (Proc Mixed) in the Statistical Analysis System (Version 8.2 SAS Institute, Cary, NC). A one-way analysis of variance was used to determine if there were significant differences between the baseline and post-intervention. Least squares estimates of means were produced – and all teacher survey data presented in the tables and figures are least squares means unless otherwise stated. A type I error of 5% was chosen for the declaration of statistical significance. In some cases, the total time assessed did not add up to the component aspects of the time being analysed, which was due to missing data and the rounding of the means.

IV. RESULTS

Total timetabled physical activity time significantly increased by 1.8% between baseline and post-intervention ($p < 0.01$). At baseline, on average 111 ± 54 (mean \pm SD) minutes per week were devoted to physical activity-related subjects, including physical education, daily exercise (physical activity) and sport (7.7% of total timetabled time per week). This time increased post-intervention to 137 ± 70 minutes (9.5% of total timetabled time) per week (see Fig. 1).

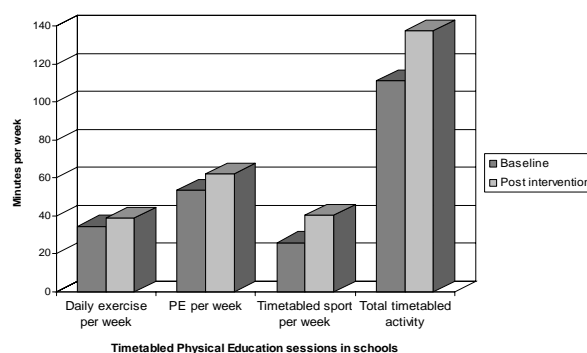


Fig. 1 The baseline and post-intervention levels of timetabled physical activity related subjects

For specific physical activity sessions, timetabled daily exercise (physical activity) showed a significant increase ($p < 0.05$) of 0.6%, from 2.4% (baseline) to 2.7% (post-intervention) of total teaching hours per week and 3.7%

(baseline) and 4.3% (post-intervention) for physical education sessions. Timetabled sports sessions also showed a significant increase, from an average of 26 ± 27 minutes (baseline) to 40 ± 39 minutes (post-intervention), which led to an overall increase of 1.0% ($p < 0.01$) of timetabled school time devoted to sport.

V. TIMETABLED PHYSICAL ACTIVITY BY SCHOOL TYPE

Intermediate schools (year 7–8 students only) devoted significantly more time to timetabled physical activity subjects than either full primary (year 1–8) or contributing schools (year 1–6), with an average of 172 minutes \pm 54 (baseline) and 181 minutes \pm 50 (post-intervention), an increase of 0.5%. For the intermediate schools, extra time devoted to physical activity at baseline came from having almost twice the amount of time timetabled for physical education and sport when compared with the other schools, but slightly less time devoted to daily exercise (physical activity). Intermediate schools post intervention had significantly increased ($p < 0.01$) the time devoted to daily exercise from 20 ± 17 minutes per week (baseline) to 43 minutes \pm 43 (post-intervention). Full primary (year 1–8) schools increased their timetabled time for physical activity sessions from 102 minutes \pm 50 (baseline) to 124 minutes \pm 69 per week, an increase ($p < 0.01$) of 1.4%. Contributing schools (year 1–6) also reported a significant increase ($p < 0.01$) of 2.0%, from 99 minutes \pm 42 (baseline) to 129 minutes \pm 71 (post-intervention). For contributing and full primary schools, these increases in total timetabled time devoted to physical activity per week were due to a significant increase in time devoted to sport ($p < 0.01$ contributing, $p < 0.05$ full primary) and – for full primary schools – physical education sessions ($p < 0.01$).

VII. MAJOR ISSUES IN TEACHING PHYSICAL ACTIVITY SUBJECTS

Teachers were asked to select, from a pre-determined list, issues affecting their ability to teach physical education in their school. They were able to select more than one issue. Table I shows the percentage of teachers who selected each issue.

VI. TEACHERS' RESPONSES TO OPEN QUESTIONS

Health and Physical Education Curriculum Document

Teachers were asked what they thought of the Health and Physical Education curriculum document. At baseline, the spectrum of responses ranged from the document was good, excellent or fine, to those that considered it too broad, unclear and difficult to understand. A substantial number of teachers responded that the curriculum minimized physical education and physical activity. Post-intervention responses were generally more positive – though, again, time to implement the curriculum and a lack of focus on physical activity remained an issue. The consensus seemed to show that the document had good ideas for discussion points for attitudes and values, but was light on physical skills. Teachers also reported the professional development, offered as part of the PAPP intervention, helped make the document more user-friendly and a better aid to planning.

Physical Activity Pilot (PAPP Intervention)

Teachers were asked open questions regarding both the positive and negative impacts of the physical activity pilot (PAPP intervention) on them personally.

Positive responses included having the opportunity to be involved in professional development, which the teachers perceived to have led to increased confidence and competence to deliver physical education. New ideas, activities and ways

TABLE I
 MAJOR ISSUES FOR TEACHERS IN TEACHING PHYSICAL EDUCATION

Major issues for schools in terms of teaching physical education	Baseline	Post test
Equipment	39.5%	32.0%
Funding	17.0%	18.5%
Presence of suitable teaching spaces	33.3%	37.6%
Timetabling	27.9%	33.1%
Availability of teaching spaces when required	27.1%	33.1%
Competition for time with other curriculum areas	54.2%	57.3%
Teacher's competence to take physical education	22.4%	26.4%
Teacher's understanding of the Health and Physical Education Curriculum	10.1%	14.6%

to teach, along with understanding the value of physical education, changed some teachers' philosophy in a positive way. Teachers referred to the lead physical activity teachers in their schools and the physical activity coordinators (PACs) as "excellent" mentors. They provided support and resources for the teachers to deliver their physical education programmes.

Negative responses reflected concerns about the extra workload and expectations, and the difficulty of trying to fit in all the ideas. Some felt there was too much talking during physical education time and not enough physical activity.

Changes in Teaching Physical Education as a Result of the PAPP Intervention

A move away from a teacher-directed teaching style to a more child-centred approach was one of the biggest changes identified by teachers about this physical education teaching programme. By using this approach, the teachers felt they used more questioning and allowed more time for the children to discuss concepts.

Teachers also reported changes in the children's physical activity patterns as a result of this project. Children were more active at lunchtime and there was less conflict in the playground. Access to equipment improved, which led to more choice of activity. Within physical education sessions, the teachers reported less able children were more involved and more active, as the emphasis of physical education was on teamwork, strategy and inclusion.

VIII DISCUSSION

The pilot project appears to have been successful in increasing the amount of timetabled physical activity sessions, with the survey reporting a significant increase over the course of the PAPP intervention. But how does this compare internationally and also historically in New Zealand? Is this time sufficient for our young children to acquire the fundamental movement skills they need so they are able to fully engage in physical activity in the future?

If we compare the PAPP intervention baseline teacher survey (2002) results to an identical survey undertaken nine years previously [6], we find timetabled physical activity time per week actually decreased from 9.5% to 7.7%. During this nine-year period, a new combined health and physical education curriculum statement [5] was drafted, released and accompanied by professional development opportunities and support resources for all teachers. Some teachers in this survey reported they believed that the 1999 curriculum statement was too broad and vague. It lacked direction for teachers and the place for physical education in the curriculum was diminished. It appears that during this period (1993–2002) teachers moved from a prescriptive physical education syllabus (1987) which strongly advocated for daily physical education, to one that incorporated health and championed a new philosophy and direction, but was less prescriptive. This resulted in less curriculum-based physical activity being delivered in New Zealand primary schools.

With the implementation of the PAPP intervention and the corresponding professional development for teachers

involved, a significant increase ($p < 0.01$) in the amount of timetabled physical activity sessions – from 111 minutes to 137 minutes – was reported. This equates to 9.5% of the school weekly timetable, the same level as reported by Ross and Cowley [6]. In other words, the PAPP intervention resulted in physical activity levels in schools returning to the same levels as seen some years' previously. This result compares favourably with worldwide data, where an average of 94 minutes of timetabled physical activity per week in primary schools was reported [9]. European schools saw the highest amount, with an average of 109 minutes, and Central and Latin America the lowest, with an average of 73 minutes. Some of these countries with low levels of reported time have advocated for an entitlement of at least 120 minutes per week to be devoted to physical activity [9]. This is similar to the legal time stipulation in the 1953 New Zealand Primary School Syllabus for Physical Education [3]. One of the main areas affecting the teachers' views on their ability to deliver quality physical education lessons are the obstacles they face. The main issues (as highlighted in Table 1) identified by teachers in this survey remained relatively unchanged post-intervention. Competition for time with other curriculum areas, lack of or access to equipment, and availability of suitable facilities, were the most-reported barriers to teaching physical education. These are similar to barriers reported in other countries [2] [9] and have a significant effect on classroom teachers' attitudes towards physical education. Teaching physical education is frequently perceived as being too difficult and complicated; for some, it is easier simply to not teach it. Classroom teachers need higher levels of support to overcome these barriers to teaching physical education. For example, at baseline, teachers' identified the lack of and access to equipment as a barrier to teaching physical education – therefore, the physical activity coordinators (PACs) became part of the solution and helped tackle this resource issue. The PACs were each responsible for a cluster of 3–4 schools located in close proximity to each other. Their main responsibility was to increase physical activity opportunities outside of timetabled school hours and to establish links with the community. These PACs sourced funding, filled out application forms and arranged for the purchase, storage and distribution of equipment for teachers to use during timetabled physical activity sessions and for the children to use during lunchtime [10]. Access to equipment was the only issue reported by teachers that decreased post-intervention. Taking physical activity to the wider school community, the PACs also initiated walking school buses, introduced physical activity leaders (PALs), and created school and community links to help support and promote physical activity. As a result of this increased resourcing and impetus, classroom teachers wanted to deliver physical education more often and have more equipment available within their class to improve the quality of the learning experience. This meant there was increased demand and pressure for equipment and available teaching space – highlighting post-intervention that the availability of equipment and teaching space continues to impede the delivery of physical education programmes.

Results from the PAPP intervention evaluation, including the teacher survey, highlighted the project's success in increasing the quality and quantity of physical education activities in the pilot schools. This led the MOE to amend the New Zealand National Education Guidelines, giving priority to "regular quality physical activity that develops movement skills for all students, especially years 1–6" [7]. This guideline was mandated in 2006 and the MOE produced a supporting resource, which included a set of guidelines and definitions for sustainable physical activity in school communities – in order to ensure teachers planning school-based physical activities have a common understanding of these terms. In this resource, physical activity can be determined as a teaching and learning context in a curriculum programme (curricular physical activity) with co-curricular physical activity being defined as "...opportunities [that] occur within schools mainly outside curriculum time – before and after school, at playtime and lunchtime, and in short breaks between planned learning activities ... [which] may include organised sport" [11]. What this created for primary school teachers was a clear mandate to include physical education in a weekly timetable, with a focus on developing movement skills. To ensure quality physical education is delivered more often, the Ministry also provided resource [11] and professional development support.

Further support for schools and teachers continued to be developed post-intervention. SPARC – recognizing the role the PACs played in promoting and increasing physical activity opportunities – produced an "Active Schools Tool Kit" [12], which included many of the successful physical activity initiatives, ideas and strategies used in the PAPP intervention. SPARC also funded active school facilitators throughout New Zealand, who were engaged to promote co-curricular physical activity initiatives in schools in their region. Schools and teachers from all over New Zealand were provided with professional development opportunities and resources to ensure that quality physical activity opportunities could be provided in primary schools. However, several years on from this project, the current situation shows funding for physical education advisers to provide support for in-service teachers has finished, and SPARC has moved away from an "active schools" focus towards a sports-oriented programme in schools: the Kiwisport initiative. What has this meant for physical education in primary schools?

The Kiwisport government funding initiative announced in 2009 (delivered by SPARC), aims to increase opportunities and access to sporting activities and develop programmes that develop movement skills. Schools have the flexibility to focus this funding where they see the most need. An Education Review Office [13] 2010 report indicated over half of schools have increased student participation in organized sport and have used Kiwisport funding to buy equipment, uniforms, and to subsidize fees and transport costs. The main challenge for schools is how to sustain these opportunities, because of the costs involved and the ability of parents to continue to provide for and fund sports participation for their children. The focus has been on co-curricular or extracurricular sport, not on quality physical education, and only a few primary schools

have used Kiwisport funding to provide for a specialist PE teacher or a sports coordinator. As a result of the Kiwisport initiative, the development of movement skills now appears to be the responsibility of the sports coach, or is expected to occur by osmosis through the sport experience. Does physical education now mean sport?

Education critics of this sports-oriented focus by the government and SPARC believe teachers and schools have regressed 15 years, when a sports-dominated curriculum – "roll out the ball", "lets play a game" – dictated physical education programmes. The "sports equals physical education" debate has now been revived. New Zealand children's movement skill levels five years on from the PAPP intervention remain low [14], and a decline in pre-service and in-service professional development time raises serious questions about the status of quality physical education programmes in New Zealand primary schools. More research on the quality of these sport experiences in developing movement skills and improving attitudes towards physical education and sport is needed to gauge the impact of the Kiwisport funding. Physical activity currently delivered in New Zealand primary schools continues to be at the discretion of the individual classroom teacher, as evidenced by the opening statement of this paper. Curricular physical education – where our children learn fundamental movement skills and are encouraged to develop lifelong physical activity habits – now appears to be consigned to history. So, where has all the physical education gone? Physical education as we know it has now been replaced by sport.

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