



London Sport Institute
at Middlesex University

Evaluation of the “Schools on the Move” Project

On behalf of

Youth Sport Trust, Department of Educational Skills, & Department of Health

Dr. Afroditi Stathi, Dr. Sanna Nordin and Prof. Chris Riddoch

September 2006

Table of Contents

.....	EXECUTIVE SUMMARY	
.....		5
1		5
2 INTRODUCTION		7
3 MAIN AIM		8
4 SPECIFIC RESEARCH QUESTIONS		8
5 METHODOLOGY		9
5.1 OVERALL DESIGN		9
5.2 SAMPLING PROCEDURES FOR CASE STUDY SCHOOLS		9
5.3 QUANTITATIVE METHODS.....		10
5.3.1 Pedometers		10
5.3.2 Questionnaire		10
5.3.3 Quantitative data analysis		12
5.4 QUALITATIVE METHODS		13
5.4.1 Data collection.....		13
5.4.2 Qualitative data analysis		14
5.5 DATA COLLECTION PROCEDURES		14
6 QUANTITATIVE RESULTS		16
6.1 PEDOMETER DATA.....		16
6.1.1 Main findings.....		16
6.1.2 Gender differences.....		16
6.1.3 Differences between high and low active children at baseline		17
6.1.4 Differences between primary and secondary schools.....		18
6.2 QUESTIONNAIRE DATA		20
6.2.1 The Schools on the Move project.....		20
6.2.2 Motives for participation on the Schools on the Move project		22
6.2.3 Differences between high and low active students.....		23
7 QUALITATIVE RESULTS		24
7.1 STUDENTS' INTERVIEWS.....		24
7.1.1 The Schools on the Move project.....		24
7.1.2 The pedometers.....		25
7.1.3 The website		26
7.1.4 Support from teachers and friends.....		26
7.1.5 Beliefs towards healthy lifestyles		27
7.1.6 Barriers and recommendations for programme implementation.....		28
7.2 TEACHERS' INTERVIEWS.....		28
7.2.1 The teacher as a role model.....		29
7.2.2 Support for programme implementation.....		29
7.2.3 Evaluation of Schools on the Move project components.....		30
7.2.4 Maintenance of healthy lifestyle		31
8 DISCUSSION		32
9 POINTS FOR CONSIDERATION		35
10 RECOMMENDATIONS		36
11 REFERENCES		38

12 APPENDICES 40

List of Figures

Figure 1. Steps and participants per week.....16

Figure 2. Step counts by gender.....17

Figure 3. Step counts at selected weeks for Low vs High active students.....18

Figure 4. Step counts at selected weeks for primary school students.....19

Figure 5. Step counts at selected weeks for secondary school students.....19

Figure 6. Percentage of students entering data during the Schools on the Move project.....20

List of Tables

Table 1. Motives for participation on the Schools on the Move project.....23

Table 2. Motives for participation on the Schools on the Move project.....23

Executive Summary

The recommended physical activity levels for children suggest that children and young people should achieve a minimum of 60 minutes of at least moderate intensity activity each day (Department of Health, 2004). This 60 minute target should be achieved through the accumulation of bouts of activity of varying duration throughout the day (Department of Health, 2004). The aim of this evaluation was to assess the effectiveness of the Schools on the Move project, in terms of increasing physical activity levels, walking in particular, in young people and in raising levels of knowledge and awareness of the role of walking and physical activity in maintaining health and well-being.

A mixed methods approach was adopted. Basic, quantitative data (pedometer counts over 28 weeks) were collected from all (54) participating schools. Additional quantitative and qualitative data were collected from 6 schools selected for in-depth case studies. The questionnaire was administered to 322 students (23.1% boys, 75.3% girls). It included sections on students' typical physical activity patterns, knowledge of physical activity recommendations, general opinions about the Schools on the Move Project, levels and types of motivation during the project, and future intentions for walking. Fourteen individual, semi-structured interviews were conducted with teachers and ten focus groups with students (3-6 students in each group) from the six participating schools, to explore their experiences and perceptions of the project and how it has impacted upon their knowledge, understanding and behaviour.

Step counts increased steadily from an average of 8355 steps at baseline to an average of 16436 in week 28 (a 97% increase) (13939 in the week 23, 67% increase). The step counts statistically increased during the 28 weeks of the programme. Boys were at all times more active than girls. The project increased the activity levels of both boys and girls to a similar extent. The average step count increases from baseline to the 12th week were 3599 (boys) and 2960 (girls) and the average step count increases from baseline to the 23rd week were 7289 (boys) and 5459 (girls).

High-active students averaged 11245 steps at baseline, while low-active students averaged 5644 steps. At the end of the project (week 23), low active students accumulated 12489 steps (an increase of 121%) vs., 15846 steps in high-active students (an increase of 41%). The project, in terms of students' data entry, was more successful in primary schools. Both primary and secondary schools witnessed a very large and consistent dropout rate throughout the duration of the project, with relatively few students entering data in any given week. The percentage of students who entered data was lower in secondary than in primary schools, both in students initially registered on the website, and in those who entered data at baseline.

Most students (63%) felt that the Schools on the Move project had increased the amount of discussion and interest in physical activity within their school. Students' intention to maintain their walking levels was optimistic as 35% reported that they 'definitely' will maintain their walking during the next 12 months (mean stage of change score = 4.92; SD=1.96). Low-active students reported higher intention to maintain their walking than high-active students. Students who reported higher enjoyment and intrinsic motivation also reported a stronger intention to walk in the future. Compared to high-active students, low-active students, a) reported greater interest in and enjoyment of the project, b) found the project more valuable and useful, c) less often felt amotivated or found the project a waste of time and d) reported stronger intentions to carry on walking as much as they could in the future.

Recommendations for further improvement of the Schools on the Move project include the following:

- The very low response rates achieved in this project stress the need for more careful design, management and quality control monitoring of quantitative data collection procedures.
- Carefully designed training for directors and coordinators should be provided. The training should include information on the programme components (the use of pedometers and website) and a detailed health behaviour change component which needs to cover areas such as individual goal setting, readiness to change and motivational techniques with a particular focus on intrinsic motivation enhancement.
- More frequent support from YST in the form of several visits at different times during the project should be considered. This would help teachers to address issues and problems at an earlier stage and to minimise any adverse impact.
- The web-based target setting procedures for the student should ensure that the provision of each target is based on personal recorded steps rather than generic targets that might demotivate less active students.
- Teachers should focus on empowering students and providing them with support and information in order to enable students to set appropriate, desirable and challenging targets.
- The school-based procedures and the website should be made more appealing to girls.
- The programme should be carefully evaluated and re-designed to become more appealing to secondary school students. A range of challenging tasks, tailored to their interests and preferences could help in improving the rate of recorded entries.

2 Introduction

Physical activity has a range of benefits during childhood including healthy growth and development, assistance in maintenance of energy balance, and improvements in psychological well-being and social interaction (Department of Health, 2004). Participation in physical activity during childhood may also have an indirect effect on risk-factors for cardiovascular disease, by helping children to prevent excess weight gain or helping overweight children to lose weight (Department of Health, 2004). Paediatric obesity is linked to numerous adverse health consequences. Short term consequences include asthma, chronic inflammation, diabetes, and orthopaedic problems (Reilly et al., 2003). Longer term consequences include morbidity from chronic diseases and increased risk of premature mortality in adulthood (Gunell et al., 1998; Must et al., 1992; Scottish Intercollegiate Guidelines Network, 2003).

The recommended physical activity levels for children suggest that children and young people should achieve a minimum of 60 minutes of at least moderate intensity activity each day (Department of Health, 2004). This 60 minute target should be achieved through the accumulation of bouts of activity of varying duration throughout the day (Department of Health, 2004). The Health Survey of England, 2002, reported that 70% of boys and 61% of girls aged 2-15 years achieve the recommended levels of activity (Sproston & Primatesta, 2004). The accuracy of this data is questionable as the results were based on self-report questionnaires - children are known to have difficulty recalling their physical activities, which is likely to result in an over estimation of activity (Department of Health, 2004).

Obesity levels in England are high and rising, with approximately 16% of 2 to 15 year olds being classified as obese (Department of Health, 2004). This rise in obesity has been attributed to a greater use of cars, parental reluctance to let children play outdoors due to perceived dangers within the environment, and increased access to sedentary alternatives to physical activity such as televisions and computers (Department of Health, 2004). The increasing levels of overweight and obesity in children suggest that children's activity levels are insufficient to prevent weight gain (Fox, 2003).

A recent review suggests that no single programme has been identified as the most appropriate for the prevention of obesity in children, although interventions can be effective in promoting a healthy diet and increasing physical activity levels (Summerbell et al., 2005). There is some evidence that

school-based interventions focused on promoting healthy eating patterns and activity-related behaviours are effective in preventing childhood obesity (Doak et al., 2006; Veugelers et al., 2005).

This report describes the results of the evaluation of the Schools on the Move (SoM) initiative.

3 Main aim

The main aim of the evaluation was to assess the effectiveness of the SoM project, in increasing physical activity levels, walking in particular, undertaken by young people and in raising the knowledge and awareness of the role of walking and physical activity in maintaining health and well-being.

4 Specific research questions

The following research questions were established for the evaluation:

- Has the “Schools on the Move” project been successful in improving the amount of walking and other physical activity performed by young people?
- Has the project raised the knowledge and awareness of both teachers and young people regarding the role of walking and physical activity in maintaining health and well-being?
- What are the overall opinions of individuals participating in the project?
- Do the young people intend to carry on trying to reach walking and physical activity targets even after the formal termination of the project?
- What psychological factors underlie participation motives and performance in the project?

5 Methodology

5.1 Overall design

The project followed a multi-method, nested case-study design. This design is appropriate as it allows for measurement at various levels within the project. We identified 3 units of measurement - the project, the schools and individuals. The project refers to the project in its entirety. The school relates to different types of school operating in different social settings. Individuals include children, project staff and teachers. Data from the analysis informed on each of these levels of measurement.

Within this design there were two distinct elements of measurement, which run concurrently:-

1. Basic, quantitative data were collected from all participating schools. These data relate to overall levels of effectiveness of the project to stimulate and sustain change. The data also informs on the level and range of impact across the whole project. Data collection procedures were built into the project design in order that minimal burden was placed on the project or school staff.
2. Additional quantitative and qualitative data were collected from 6 schools selected for in-depth case studies. Researchers visited each school for 3 days to collect data which inform on 'process' factors operating within the project and which contribute to its levels of effectiveness and impact. These data relate to project design, delivery, internal and external communications, record keeping, resource materials and acceptability. The data also inform on individuals' perceptions of and reactions to the project – its design and materials. The data give important insights to the 'why' and 'how' the project was or was not successful. The collection of such process data identifies how these processes operate and how they vary within and between differing school contexts and settings.

5.2 Sampling procedures for case study schools

Six of the 54 participating schools were chosen as case study schools. Schools were chosen on the basis of gender (2 single-sex, and 4 co-educational schools), age (3 junior and 3 secondary schools) and region of the country (urban and more rural location, north and south, and variety in socio-economic status). The schools selected were:-

Worthing (Davison High School)

Tynemouth (Priory Primary School)
Dagenham (Rush Green Junior School)
Mansfield (The Manor School)
Leicester (The Lancaster school)
Wolverhampton (St Paul's Primary)

Four hundred and ninety students from the case study schools participated in the evaluation. One hundred and ninety seven were boys and 293 were girls. The age range was between 10 and 13 years, with 117 students being 10 yrs, 163 being 11 yrs, 182 being 12, and 24 being 13 (Mean age = 11.28 years old; SD = 1.00).

The number of participants registered for each school was 94 (Rush Green Junior School), 60 (Priory Primary School), 263 (The Manor School), 303 (Davison High School), 346 (The Lancaster school), 31 (St Paul's Primary School). The number of questionnaires actually obtained from each school was 69 (Rush Green Junior School) + 58 (Priory Primary School) + 171 (The Manor School) + 126 (Davison High School) + 40 (The Lancaster school) + 26 (St Paul's Primary).

5.3 Quantitative methods

Pedometer data and questionnaire data constituted our primary quantitative sources of information.

5.3.1 Pedometers

Students entered their daily step data onto the Schools on the Move website throughout the project.

5.3.2 Questionnaire

The questionnaire comprised the following sections:-

Students' typical physical activity patterns

These questions were concerned with sports played yesterday, length of and activities undertaken during morning break, activities undertaken during lunch break, time to travel home from school, evening activities, time of getting up in the morning and of going to bed in the evening, normal mode of transport to and from school.

Knowledge about physical activity recommendations

This section included questions regarding time engaged in moderate intensity physical activity and number of steps young people need to take daily to achieve and maintain good health.

General opinions about the Schools on the Move Project

These questions were concerned with whether the students perceived that there was more talk about physical activity within their school since the project started (in school generally, not just in PE and school sports), opinions about the Schools on the Move website, and whether they perceived themselves to do more physical activity now than at the start of the school year.

More specific opinions about the Schools on the Move Project

These questions were taken from the Intrinsic Motivation Inventory (IMI; Ryan, 1982), and the Behavioural Regulation In Exercise Questionnaire – 2 (BREQ-2; Markland & Tobin, 2004). The variables in these questionnaires have been shown to be meaningfully related to the outcomes of physical activity interventions in previous research. Using these questionnaires, we were able to examine specific details of the students' motivation during the project. The IMI has a number of subscales, of which we used those tapping into interest and enjoyment (e.g. *"I enjoyed doing this project very much"*), value and usefulness (e.g. *"I think that doing this project was useful for making me healthier"*), and those concerning the three most salient psychological needs: perceived choice (*"I did this project because I wanted to"*), perceived competence (*"I am pleased with my performance in this project"*), and relatedness (*"I feel close to the other people in the project"*). In total, our IMI had 33 questions which were scored on a scale from 1 (*"Not at all true"*) to 7 (*"very true"*). From the BREQ-2, we used the subscales examining amotivation (*"I don't see why I had to take part in the project"*), external regulation (*"I took part in the project because my friends/family/teachers said I should"*), identified regulation (*"I took part in the project because I think exercise is good for me"*), and intrinsic motivation (*"I took part in the project because it's fun"*). In total, the BREQ-2 has 19 questions and they are scored from 0 (*"Not true for me"*) to 4 (*"very true for me"*).

Future intentions for walking

Questions regarding the extent to which the students intended to keep up their walking including both general (*"I plan to keep up my walking during the next 12 months"*) and more specific questions (*"I plan to walk at least 12000 steps per day over the next 12 months"* for girls and *"I plan to walk at least 15000 steps per day over the next 12 months"* for boys). In total, students responded to three questions about future intentions to walk, scored on a scale from 1 (*no, definitely not*) to 7 (*yes, definitely*).

Concluding questions

The students were asked how many steps they had taken so far that day, their gender, that day's date, whether they had had help in completing the questionnaire or not, and whether they had any further comments about the project.

5.3.3 Quantitative data analysis

Data was inspected for normality of distribution and cleaned for errors and outliers. Data from participants younger than 9 or older than 13 were omitted. Pedometer data was computed into weekly averages if a child had entered three or more daily counts for any particular week.

Daily step counts lower than 1000 steps were treated as missing data, as such low counts were taken as evidence of a child not wearing her/his pedometer for the whole day, or of a malfunctioning pedometer.

Internal reliabilities of subscales were calculated using Cronbach's alpha. The backward-scoring items were reversed and appropriate subscales were computed. Means, standard deviations, ranges, percentages, and frequency counts were then calculated to provide descriptive information about the sample.

For the pedometer (step) data, paired samples t-tests were used to compare the average step counts at baseline with those at selected weeks. A series of Analyses of Variance (ANOVAs) were then used to investigate gender differences. Because several such analyses were conducted, a more conservative level of significance was accepted following a Bonferroni correction. ANOVAs were used to examine differences in step counts between students who were more or less active at baseline. Students were first split into two groups by means of a median split. Bonferroni corrections were also applied to these analyses. A chi-square test was used to examine whether gender differences existed between proportions of high and low-active students.

For the questionnaire data, descriptive information (means and standard deviations, frequency counts) was calculated for the whole sample and also separately for boys and girls. ANOVAs were used to examine gender differences (Bonferroni corrections were applied as appropriate). Pearson Product Moment correlations were calculated to assess bi-variate associations between variables.

For the analyses using both step data and questionnaire data, ANOVAs were employed to examine how low- and high-active students differed, with Bonferroni corrections being applied as appropriate. Pearson Product Moment correlations were calculated to assess bi-variate associations between variables.

5.4 Qualitative methods

5.4.1 Data collection

Fourteen individual, **semi-structured interviews** were conducted with teachers from the six participating schools, to explore their experiences and perceptions of the project and how it has impacted upon their knowledge, understanding and behaviour. Participants were asked to share their views on the project, the constraints of trying to become more physically active, their attitudes and strategies towards the maintenance of an active lifestyle and their suggestions and recommendations for further development of the project. The interviews lasted between 40 and 60 minutes.

Ten **focus groups** with students (3-6 students in each group) took place in the school setting. A theoretical sampling approach was used to ensure that focus groups fully represented: gender, age, ethnicity, activity levels. Discussions were concerned with exploring the students's views and experiences of walking and physical activity, as well as more general themes about physical activity and active lifestyles (including where appropriate, the lifestyles and activity of other household members). The focus groups lasted between 30 and 60 minutes. Focus group data were anonymised during transcription.

Similar interview guides were used for both the individual interviews with teachers and for the focus groups conducted with students. This was to ensure that similar questions were asked to all participants. All questions were of an open-ended nature to encourage participants to speak freely. For any given question, the interviewer used clarification and probes as necessary to gain the required depth of information. The interview guides, which were similar for teachers and students, were based on the previous experience of the research team as well as relevant literature.

The first section of the interview included questions about the teachers' role in the project, their overall opinions of the program, whether teachers themselves used a pedometer, and their opinions of the programme materials, the pedometers and the website. Questions also addressed the level of support that received in relation to the project (e.g., from teachers if a child, or from other teachers, lead/PESS teacher, or from the Youth Sport Trust if a teacher).

The second section addressed reasons for participating in the project, to what extent they felt competent and able to perform the various tasks and challenges, and to what extent they felt related,

connected, and part of a group with the other participants (vs. alone) during the project. The extent to which they became involved in the project was addressed, as well as the extent to which they adapted the project tasks and challenges to suit their own needs, and the extent to which the project gave them the opportunity to make their own choices and decisions. These questions were based in the same theoretical framework as those in the Intrinsic Motivation Inventory (IMI) used with the students (questionnaire section). Further questions addressed how effective the participants felt that the project was overall, and the factors or reasons they thought made the program effective/not effective. Finally, factors that could make the program more effective were requested.

In the final section, participants were asked about the extent to which they believed that they would continue to improve or maintain their walking and/or physical activity levels. Teachers were also asked to what extent they believed that their school would continue to improve or maintain the programme itself, or the general message of the program. Finally, participants were asked whether there was anything that they would want to change about the program, and whether they had any further comments or suggestions.

5.4.2 Qualitative data analysis

Interviews were tape recorded and transcribed *verbatim*. Data were managed and organised using the NVivo qualitative software package. Transcripts were coded and common themes were identified. The process for identifying common themes was based on deductive and inductive analytical procedures. This included scanning the data for categories and relationships among the categories, developing working typologies based on an examination of initial cases, and modifying and refining each of these on the bases of subsequent cases. Consequently, new categories emerged as well as sub-divisions within each category (Le Compte & Preissle, 1993). A detailed description of both teachers' and students' responses was shared between researchers to enable similarities and differences to be identified and agreed. Peer- debriefing methods were employed to enhance the trustworthiness of the study (Miles & Huberman, 1994). Three researchers dealt with the data separately so as to maximise the credibility of the data. Member-checks were used to validate preliminary findings. Preliminary results were discussed with a small number of participants from all case studies as part of informal conversations so as to further enhance the validity of the results.

5.5 Data collection procedures

The lead teacher in each school was contacted via email in order to organise the school visits. This was followed up by telephone. The three-day visit to each school was organised as follows:

Day 1:

Researchers met with the lead teacher. Information was given to students (information sheets pack and parents' questionnaire pack). Students were informed about the importance of returning the signed parental consent form on the following day. Interviews were arranged with two teachers one of whom was the lead school teacher. The time plan was agreed for questionnaire distribution to the appropriate classes (typically all classes were booked in for day 2, plus a 'dropout session' booked for day 3, for students who did not return their consent form on day 2). Focus groups were organised for day 2.

Days 2 and/or 3:

Interviews and focus groups were conducted with teachers and students. Questionnaires were administered.

Day 3:

Drop-out session planned for students who had forgotten on day 2 to return their consent forms. Questionnaires from students who failed to bring their informed consent form on day 3 were not included in data analysis.

6 Quantitative results

6.1 Pedometer data

6.1.1 Main findings

Baseline pedometer data was collected from 1966 students (44.2% boys, 55.8% girls). This number steadily decreased throughout the project, with 1469 students providing data in week 1, 1107 in week 2, 1000 in week 3, <500 in week 8, and <100 in week 24.

Step counts increased steadily from an average of 8355 steps at baseline to an average of 16436 in the 28th week (97% increase) (or 13939 in the 23rd week (67% increase), given that N in week 28 is very low; n=31). There is a significant increase in step counts from baseline to the week 1 ($p < 0.01$), with a mean increase of 629 steps (8% increase) (See Figure 1). The step counts increased significantly throughout the 28 weeks of the programme.

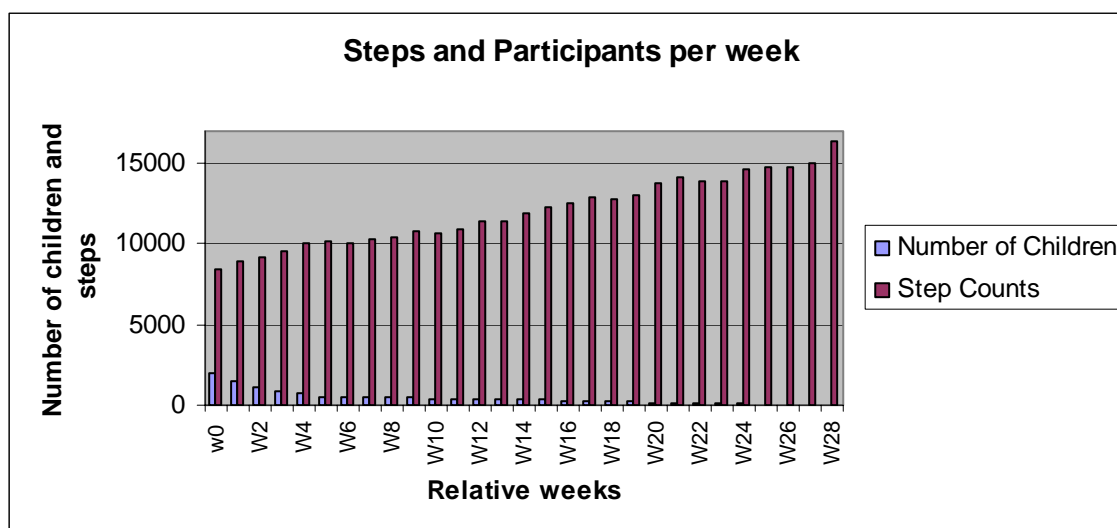


Figure 4. Steps and participants per week

6.1.2 Gender differences

Boys were more active than girls at baseline, (mean = 9377 steps v 7724 steps). This difference persisted throughout the project (week 12: boys = 12917 steps, v girls 10637 steps). At the end of the project (week 23), the difference remains significant (boys = 16214 steps, girls 12698 steps).

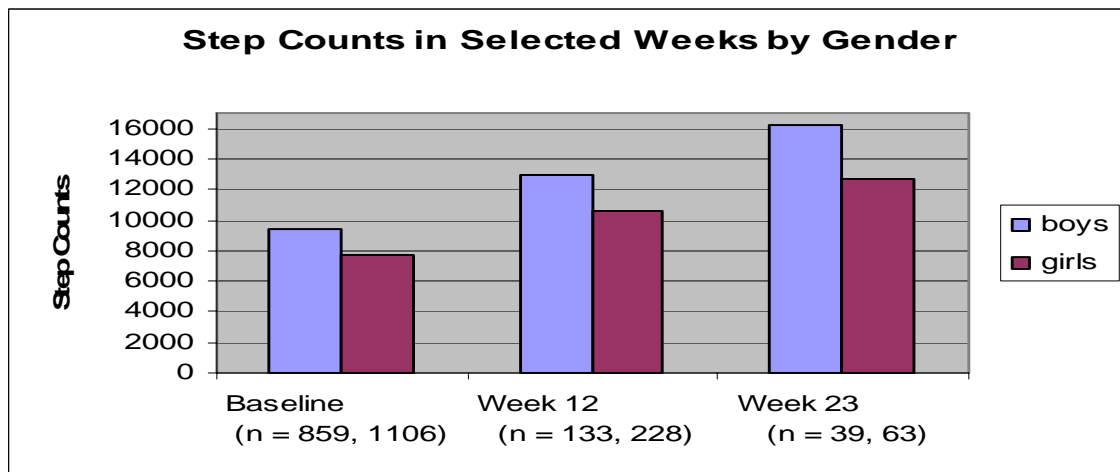


Figure 5. Step counts by gender

There are no significant gender differences in the magnitude of improvement in daily steps - the average step count increases from baseline to the week 12 were 3599 (boys) and 2960 (girls). The average step count increases from baseline to the week 23 were 7289 (boys) and 5459 (girls). Therefore, although boys were at all times more active than girls, the project increased the activity levels of both boys and girls to a similar extent.

6.1.3 Differences between high and low active students at baseline

Students were classified into high-active vs. low-active at baseline, according to whether they were above or below the median daily step score. ($n = 983$ each group; median daily steps = 8046). High-active students averaged 11245 daily steps at baseline, while low-active students averaged 5644 steps. A significant gender difference exists, with boys being more likely than girls to be classified as high-active at baseline (59.6% boys, vs. 42.6% girls). The difference in step counts between low and high active students remained significant throughout the project. At week 12, low active students accumulated 9930 steps (an increase of 76%). High active students achieved 13179 steps (an increase of 17%). At the end of the project (week 23), low active students accumulated 12489 steps (121% increase) vs., 15846 steps for high-active students (41% increase).

The above results represent data from different time points across the full length of the project. At any single time point the students providing data are not necessarily the same group of students who provide data at other points. In other words, the analyses represent data from different samples of students at the different time points. A more rigorous analysis is to assess changes in students who provided data at all relevant time points.

This analysis provides slightly different results. Only a small number of students provided data across the whole project. Step count changes from baseline to the week 23 were no different for high- vs. low-active students, with average step count increases being 6865 for low-active and 5294 for high-active students. Interestingly, step count changes from baseline to the week 12 did differ between the two groupings, with average step count increases being 4345 (low-active) and 2057 (high-active). Thus, the students classed as low-active at baseline had increased their step counts to a greater extent by the mid-point of the project. The students classified as high-active at baseline remained more active than those initially classified as low-active at all times.

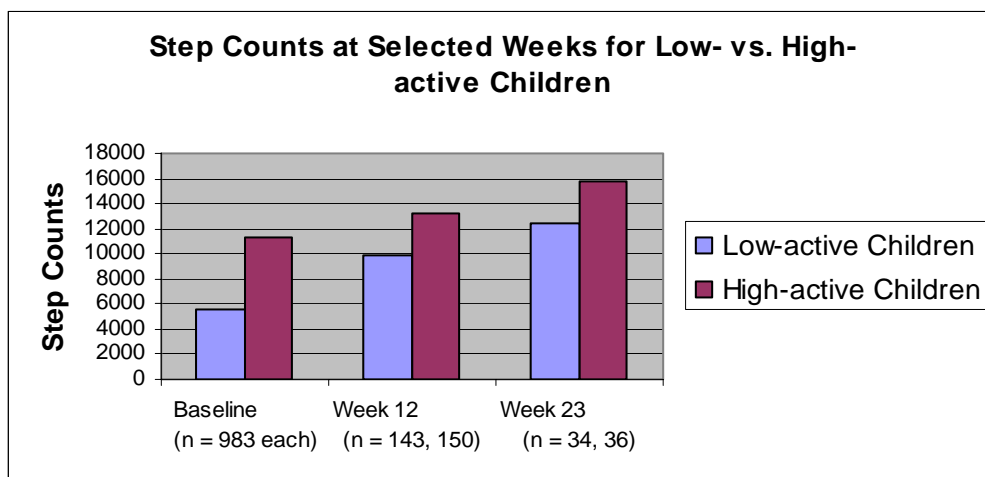


Figure 6. Step counts at selected weeks for Low vs High active students

6.1.4 Differences between primary and secondary schools

The increase in step counts and decrease in recorded entries appear to be similar between primary and secondary schools. However, the numbers of students in the different types of school differ greatly, with the database having registered at baseline

- 1535 primary school students (31.2%) and

- 3378 secondary school students (68.8%)

10 special school students were also registered, but because this group was so small, it was not included in these analyses.

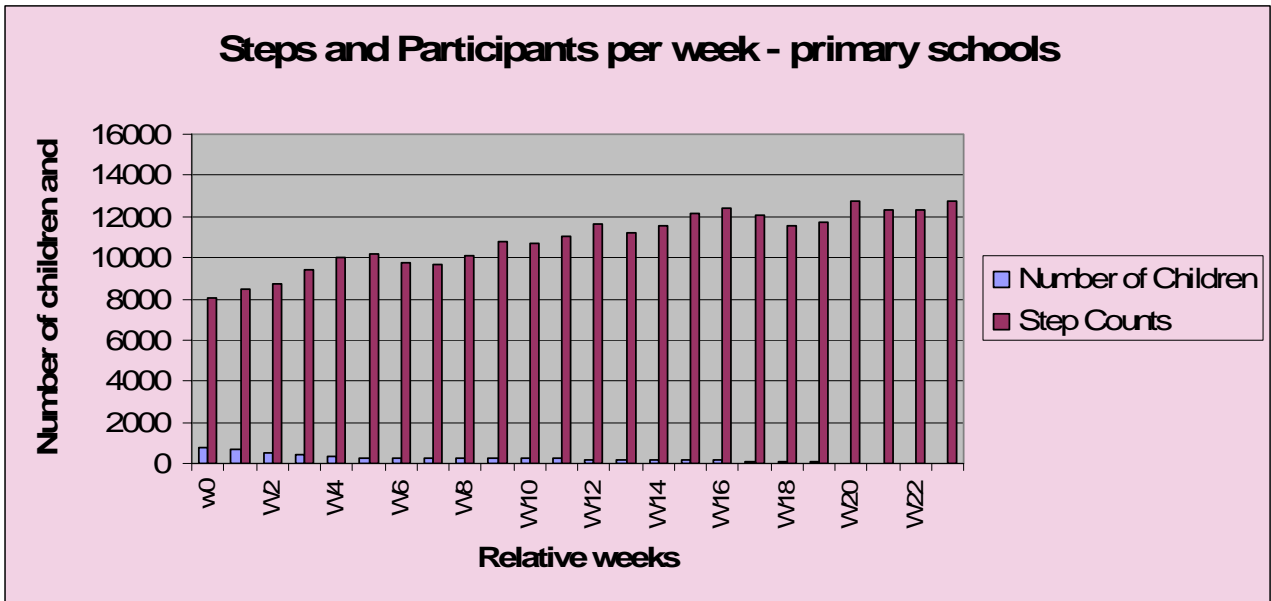


Figure 4. Step counts at selected weeks for primary school students

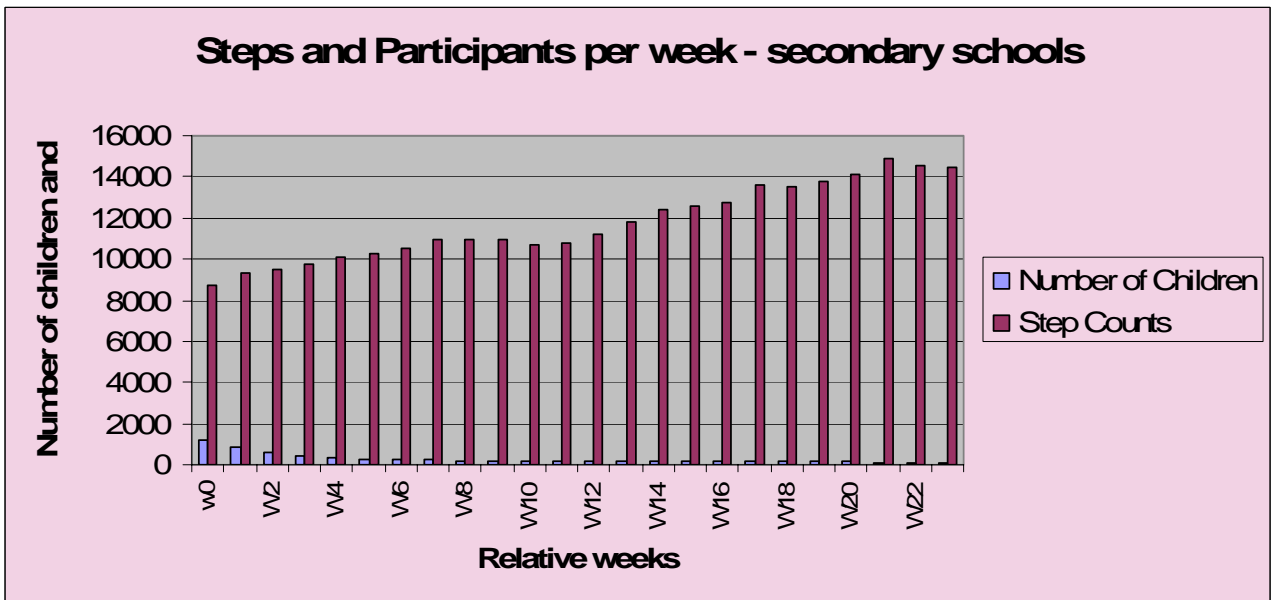


Figure 5. Step counts at selected weeks for secondary school students

To examine differences in data entry between school types, the percent of students who entered data each week were inspected. This was done in two ways:

- a) calculating percentages of students who entered data in a given week *of those who were registered on the website at baseline*
- b) calculating percentages of students who entered data in a given week *of those who entered data at baseline*

These results are displayed below.

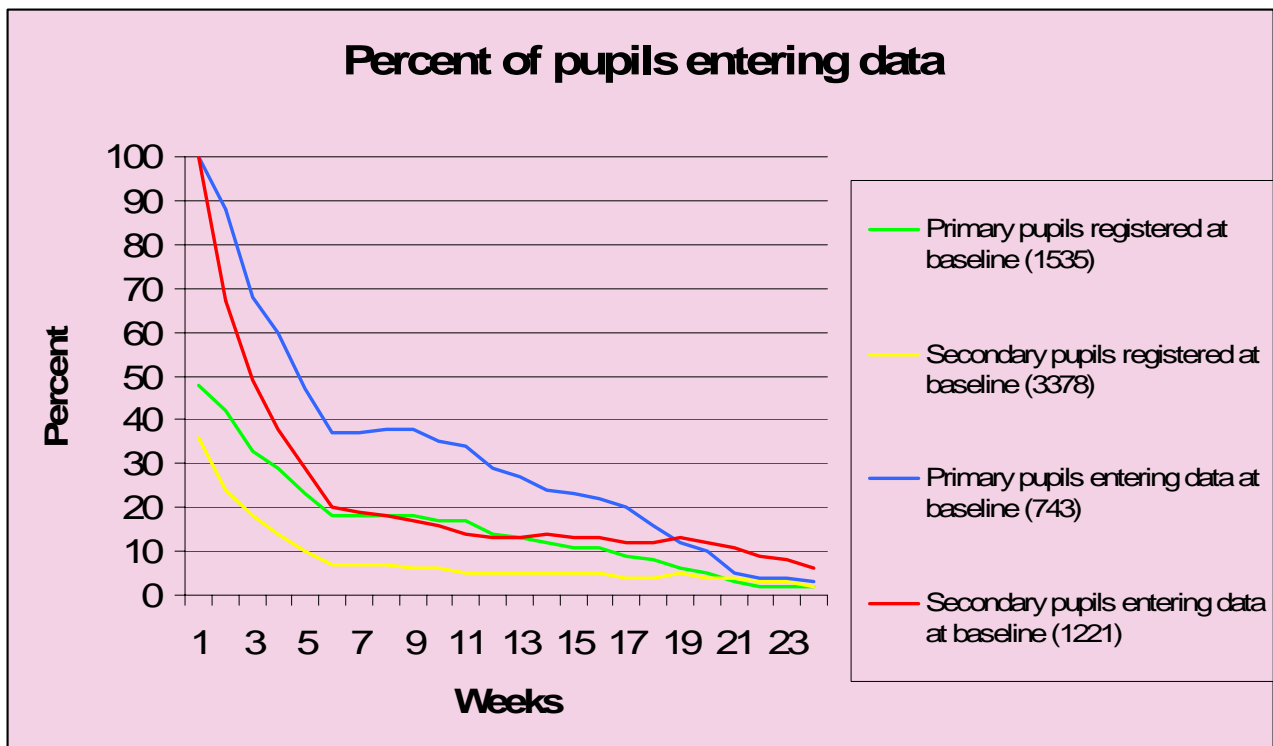


Figure 6. Percentage of students entering data during the Schools on the Move project

Approximately half (48%) of primary school students who were initially entered on the database actually entered baseline data (green line). Of the students who did, most only did so for a short time, as indicated by the sharp and relatively rapid decline in number of data entries.

Similarly, the number of secondary school students who entered data in any given week was very low and declined quickly. Interestingly, of the secondary school students registered, only just over 1/3 went on to record data at baseline.

It further appears that a higher percentage of primary school students entered data onto the website in any given week, with the exception of the last weeks than secondary school students.

6.2 Questionnaire data

Valid questionnaire data was collected from 322 students (23.1% boys, 75.3% girls). Forty six per cent of students reported correctly that the recommended daily activity for children is 60 minutes. More boys (58.6%) than girls (43.4%) answered correctly.

6.2.1 The Schools on the Move project

Regarding the recommended daily steps for young girls, only 27% of students reported correctly that the required steps are 12,000.

Regarding the recommended daily steps for young boys, only 26% of students reported correctly that the correct number is 15,000 steps. A higher percentage of boys (36.8%) than girls (23.7%) gave the correct answer.

Most students (63%) felt that the project had increased the amount of talk and interest about physical activity in their school. Thirty five per cent of students (29.8% of boys and 35.3% of girls) reported that they had not perceived any changes on the amount of talk about physical activity in their school.

Opinions about the website varied. Forty percent of students gave a neutral evaluation of the website, whereas 30% of students reported that the website was useful and 30% of students felt that the website was not useful. A higher number of boys (19%) than girls (4%) reported that the website was very useful. However, more girls (24%) than boys (17%) reported that the website was very useful.

Most students (51%) reported that since the beginning of the school year they had increased their physical activity levels. Forty seven per cent reported no changes in their physical activity levels. A higher number of boys (30.2%) than girls (12.5%) reported increasing their physical activity levels substantially. A similar number of boys (33.7%) and girls (33.1%) reported increasing their physical activity levels moderately.

Students' intention to maintain their improved walking levels was optimistic, as 35% reported that they definitely will maintain their walking during the next 12 months (see Table 1). There were no statistically significant gender differences. However, on the gender specific questions about the intention to achieve the recommended daily steps, 34% of girls reported that they were unsure that they can achieve 12000 steps/day. Boys were more confident, as 37% reported that they definitely will achieve the recommended 15000 steps/day over the next 12 months.

Table 1. Intention to maintain walking levels

	No, definitely not			I am unsure			Yes, definitely
	1	2	3	4	5	6	7

<p>I plan to keep up my walking during the next 12 months ($n = 330$)</p> <p>- No difference between girls and boys - Low-active reported higher intentions than high-active</p>	<p>Mean = 4.92 (1.96)</p> <p>Most common response (35%) was 7, 'yes, definitely'</p>
<p>I plan to walk as much as I can every week during the next 12 months ($n = 329$)</p> <p>- No difference between girls and boys - Low-active reported higher intentions than high-active</p>	<p>Mean = 4.94 (1.90)</p> <p>Most common response (32%) was 7, 'yes, definitely'</p>
<p>GIRLS ONLY: I plan to walk at least 12000 steps per day over the next 12 months ($n = 253$)</p>	<p>Mean = 4.58 (1.78)</p> <p>Most common response (34%) was 4, 'I am unsure'</p>
<p>BOYS ONLY: I plan to walk at least 15000 steps per day over the next 12 months ($n = 112$)</p>	<p>Mean = 4.71 (2.20)</p> <p>Most common response (37%) was 7, 'yes, definitely'</p>

There were no statistically significant gender differences in perceptions about specific elements of the project. One of the best attributes of the programme was perceived to be the notion of 'relatedness', as it helped students to feel more related to other students. Most students reported neutral beliefs on how much they enjoyed the programme, how competent they felt to complete the various tasks, and how useful the project had been.

6.2.2 Motives for participation on the Schools on the Move project

Most students reported that they participated in the project because they value the benefits of physical activity and they enjoy the exercise experience (Table 2. The more a child a) felt competent regarding the tasks in the project, b) s/he took part out of free will, c) felt that the project was valuable and useful, d) felt meaningfully related to other participants in the project and e) perceived talk about physical activity in her/his school to have increased since the beginning of the project, the more s/he was intrinsically motivated, enjoyed the project and found it interesting. Children who reported higher enjoyment and intrinsic motivation generally reported a stronger intention to walk in the future.

Table 2. Motives for participation on the Schools on the Move project

	Not true for me	Sometimes true for me	Very true for me
	0	1	2
	3	4	
Amotivation –			
The child sees no point in participating	Mean = 1.67 (1.26)		
<i>No difference between girls and boys</i>			
External Regulation –			
The child took part due to external pressures and demands (e.g. having to do something)	Mean = 1.29 (1.05)		
<i>No difference between girls and boys</i>			
Identified Regulation –			
The child took part because s/he values the benefits of exercise (e.g. becoming fitter)	Mean = 2.11 (1.04)		
<i>No difference between girls and boys</i>			
Intrinsic Motivation –			
The child took part because s/he enjoys the exercise experience itself	Mean = 1.87 (1.19)		
<i>Boys scored more highly than girls</i>			

6.2.3 Differences between high and low active students

Compared to high-active students, low-active students, a) reported greater interest and enjoyment, b) found the project more valuable and useful, c) less often felt amotivated or found the project a waste of time and d) reported stronger intentions to carry on walking as much as they could in the future. Furthermore, the lower the baseline step count, the higher were the reported scores for a) interest and enjoyment, and b) value and usefulness. Finally, the more the students a) enjoyed the project and found it interesting and b) felt that the project was valuable and useful, the more they increased their step count from baseline to the middle of the project (week 12). This analysis could not be performed for the sample at the end of the project due to low number of responses.

7 Qualitative results

7.1 Students' interviews

7.1.1 The Schools on the Move project

The findings from the students' interviews suggest that the project motivated the students to become more active and increased awareness of the importance of a healthy lifestyle and the role of physical activity. The schools' ethos played an important part in students' participation and engagement with the project. The students who attended schools committed to increasing awareness of healthy living were more motivated to participate in the project and meet pedometer targets compared to those attending schools with a less clear approach on health and physical activity. Most schools had a clear strategy on healthy living and healthy lifestyles which as evidenced by their participation in the project. Support from the YST in the form of materials, information packages and teachers' seminars helped teachers and schools to refine guidelines and strategies to increase awareness of health and participation in physical activity.

The students suggested that their participation in physical activity increased not only during school hours but also during the weekend.

'... I thought it was really good because the school started getting more involved with it and people started to run round more to get more steps...'

'... I thought it was a good project because it started to get year 6 and other classes more healthy and get more active because we've got new equipment. Year 6 have started running about, so all the lower classes start running about more now...'

'...It helps you to get another chance of exploring different other sports...'

Some students mentioned that due to increased prevalence of obesity in students it is important to have projects like the Schools on the Move project because they can help students to become more active and be more aware of healthy lifestyles. As one student commented: *'...There's more obesity on children nowadays than there was and I think it's a good opportunity for children in that situation to change it all around and have a better lifestyle...'*

The students started participating in more sports during school hours and also at home with friends, as one student explained: *'...I felt that I wasn't doing enough sport and that I wasn't getting enough, I wasn't sort of participating in as much sporty things as I should have been so I thought if I had the pedometer it might make me sort of want to join in a bit more, and get a bit more healthy'*.

7.1.2 The pedometers

Pedometers were a strong motive for students' engagement with physical activity. From the students' responses it was evident that they increased their physical activity involvement as a result of the pedometers, especially during the weekends, as one student explained: *'...At weekends, on Saturday and Sunday I just used to watch TV...now with the pedometers we play football... and do more exercise and running around'*. The pedometers helped students to change their behaviour and attitudes towards exercise during school and out of school hours. Nearly all students explained that due to the pedometers they became more active and were engaged in higher levels of moderate activity than before the start of the project. The students stressed:

'I thought it was good because it keeps you healthy, keeps you fit and exercised'

'It was a good idea. Everyone just kept on doing more exercise than they normally would like running round in circles in the playground'

'...It's good because most of my family now they want to get a pedometer because they always use mine now...'

'I think it's brilliant... because you go home and you tell your parents all about the project and they tell it all about to their friends so, I think it encourages people more to buy pedometers and get out more'

'...people nowadays are getting more obese and when you come home from school you just lounge on the settee and watch television and eat and eat and eat ... If you just have about an hour, an hour and a half of just using your pedometer and using it outside it can make all the difference and not only having fun but health wise...'

However there were some negative responses related to the pedometers with the most common one being *'easily broken and lost'* as well as *'unreliable in terms of counting steps as they don't measure all activities such as swimming, skating etc...'*. In two schools the above comments had an impact on students' participation since many lost their pedometers after week two which affects the success of the project; as the following student explains *'...but the problem about the pedometers was when people were taking them home sometimes they kept losing them...'* and *'That was quite a big problem really because they keep on losing them and dropping them...'*

7.1.3 The website

Students suggested that the website was a motivating factor to maintain activity. More specifically, recording steps on the web was a good way of monitoring performance and increasing activity levels, as one student explained: *'Well the website was good because it gave us tips on what to do if you are not getting that many steps'*. They talked about setting up step targets with comments such as *'...it encourages you to do more sport even when you're not in school. Like, outside school it makes you want to reach your target'*, *'a very good website and informative'* and *'I thought that the website was good because you could find out your steps and your target, next target to reach...'*. In addition students commented on the structure of the website. They explained how they enjoyed the games, the colours and also the certificate given. The following themes illustrate the point:

'...fun to use'

'...I liked how you get a certificate'

'...Got very good graphics and colours on it as well'

'...all the games were good.... Climbing, running and football... my favourite...'

Some students however, mentioned that they had *'...difficulty with passwords and slow internet'* to *'difficulties maintaining targets'*. In some cases limited access to computers in schools made daily recording of steps and targets difficult. The following comments illustrate the comment:

'...Yeah, it was a bit confusing...'

'Sometimes it doesn't count all your steps...'

'The website's really hard... Yeah...And no-one could log onto it well and the targets kept changing... When you had a set target next time you went on it was a different target'.

'The teacher said it was supposed to take like 10 minutes and it took about an hour to get everybody to log in'.

7.1.4 Support from teachers and friends

The students praised the support they received from teachers to maintain high activity levels during the project. Teachers' participation in the project (they followed the same protocol as students) motivated students to continue participating in the project. In some case studies teachers' determination to succeed in the project was evident in the students' interviews. The students commented on their teachers' support and motivation to use pedometers in and out of school and become more active. Whole school approach on healthy living, lifestyle and physical activity

played a significant role on students' participation. The following themes extracted from the students' interviews illustrate the point:

'The teachers helped us with that and they were encouraging us because in the first few days that we went outside with our pedometers we were all like just running up and down trying to get the steps',

'...They help because every Friday they take us for a walk outside school'.

'...They were very supportive and now they've also set us a trail on the field that we do at lunchtime'

'...I liked it because we went on walks with our teacher. We went like round the school and the fun and games on the playground were fun'.

In addition students found very helpful the fact that they worked during the project very closely with their friends and peers. They mentioned that having common goals with friends encouraged them to participate: *'...Everyday me and my friend go round the playground once or twice running around for a bit...'* and *'...if I had to do it on my own I probably wouldn't have done it'.*

7.1.5 Beliefs towards healthy lifestyles

In terms of activity levels, most students suggested that they walked more because of the project. In schools that followed a more focused approach implementing the project, students became more active especially during the weekends trying to meet targets and maintain steps. Many students mentioned that they changed the way they were getting to school *'...I tried to walk to school to do more steps...'*, and *'...like if I was going up to town I'd get the bus early I'll get off the bus so I could walk up to get more steps. If I went to the zoo and you could get the little train around the zoo I'd walk it so I could get more steps and I found that helped and it was a more fun way of getting more pedometer steps as well'* and *'I think we've learned more of the area by walking outside more and through school times... discovered different places to walk instead of just catching the car or a taxi or a bus or something'*. Apart from changes in attitudes towards physical activity students mentioned that their eating patterns changed and they increased their consumption of fruit and vegetables: *'...we learned about how eating healthy like instead of having like salty snacks like crisps and that in the break time we've had like apples and carrots and oranges and pears, where we can just go and pick it and eat that instead'.*

Most of the students stated that they will maintain participation in physical activity even after the end of the project. As the following students explained:

'...Because we've got used to it now and it's hard to go back down to normal again (no activity)...'
'... We get used to play with more equipment and stuff at school...'
'... With the programme all of the things it says on the internet and stuff about obesity and stuff then I'd think I'd want to keep trying to keep up steps and keeping active'

7.1.6 Barriers and recommendations for programme implementation

The success of the project was compromised in some cases by factors such as bad weather '*...It's too cold and too dark and it just makes you want to sit down or something like that...*' and schools holidays. Students stated that the time of the year was actually a barrier to be more active since it was cold outside and it was getting dark quicker. Many students mentioned that during holidays they were unable to log on and get new step targets due to lack of internet at home. Especially during Christmas holidays many students explained that they didn't record their steps or wore the pedometers '*...it's Christmas... waiting for presents and stuff and you forget about steps...*'. Another issue that emerged from the students interviews was the length of the project. Students who received less support from staff to participate in the project mentioned that the project '*...was too long...*' and '*...boring after a while...*'.

On an individual level, students mentioned that involvement of the whole family could act as a good incentive to participate and maintain involvement in physical activities especially during the weekend. On a school level, students stressed the need for the development of more extra-curricular clubs covering a diversity of sports to encourage more students to participate. Finally on the project level, students stressed the need for more pedometers available to them and possible more advanced ones, the use of prizes on the web when managing to maintain targets and more importantly more sports equipment.

7.2 Teachers' interviews

Teachers made positive comments and they claimed that students' increased participation levels in physical activity were indicative of the programme's success. The teachers mentioned that the project helped students to increase their awareness of healthy living principles. They supported the need for similar projects due to the increased levels of obesity amongst young children and the importance of being active. The following themes illustrate the point:

'I think it's a really good idea, I encourage anything that's going to make the children more aware of their own fitness and health'

'I think it has definitely encouraged children to think about their physical fitness, to think about how much exercise they do. I think it has encouraged them to do more exercise and just a general awareness...'

'...I think its not just the healthy going out and that....its passed on to some of the other classes as well and some of the children have gone out and got their own pedometers and have started wearing their own pedometers, so its spread the message right the way through the school as well'

7.2.1 The teacher as a role model

All teachers, except the administrators of the project, participated actively in the project by using the pedometers themselves. As mentioned earlier, this played a significant role in the students' participation rates and their physical activity levels. They said that taking a more active role was a motivator factor for the students to participate as one teacher explains '*... they would come up to me and they would ask how many steps did you do today Miss?*'. They all mentioned that students tended to check teachers' steps everyday which added to teachers' determination to meet targets. In addition they believed that participating actively in the project could make students more determined to participate themselves since students tend to view teachers as role models. Teachers mentioned how the pedometers made them aware of their fitness level; in most cases many teachers suggested that their fitness levels were very low. The use of pedometers showed how sedentary their every day life is and how it changed their attitudes by trying to increase their everyday steps, as one teacher said: '*It has been quite interesting. I found myself going to the toilet to see whether I've done enough steps*'. In addition all teachers stated that they increased their activity levels especially during the weekends as a result of the pedometers:

'It was good. It showed some interesting things up. My lack of exercise of a weekend, but yeah, I enjoyed doing it'.

'...Interesting to see how much I did because I always thought I dash about all day long but generally my average score wasn't as high as it should have been for an adult I don't think...'

7.2.2 Support for programme implementation

Teachers commented on the support they received from the YST during the implementation of the project. The general consensus was that the equipment and materials received were helpful and sound. Even though few mentioned that they had some problems with the initial materials; with the help from the YST they overcame problems and the implementation was smooth. The following comments support the above statement:

‘...I read through them all, thought they were well presented...’

‘... The Youth Sport Trust were quite good when they first set it up..they were very easy to talk to when they were sending the pedometers out, because we had a slight problem at the start when they didn’t arrive but they were quite quick to resolve it...’

Nevertheless, there were some cases where the teachers faced some problems but they mentioned that every time they had to contact someone from YST they were very helpful to address questions and provide solutions as one teacher explained: *‘Whenever I have spoken to anyone at the Youth Sport Trust they’ve always been really helpful and sort of answered my questions and helped’*.

There were however, some cases when teachers sought the need for more support especially during the initial stages of the programme. More specifically they suggested that they would have preferred if someone from the YST visited the school to give an induction on the use of the website such as entering data: *‘I think, that the web access would not be difficult, if we had something like a CD with it, that would make it easier...’* and *‘...I think we were struggling with how to enter the children’s data initially onto the computer and someone helped us over the phone and that was great...’*.

7.2.3 Evaluation of Schools on the Move project components

In some cases timetabling caused difficulties in the implementation of the project with teachers not having the time to use computers to enter data on the website. Other factors that hinder the implementation of the project were the time of the project as many classes had SAT’s exams and also the pedometers. Teachers mentioned that many students lost their pedometers and that made things more difficult.

‘We’ve struggled with the actual pedometers actually, sort of losing them, misplacing them, replacing them with other ones and then the batteries of those running out, so it has been, we’ve probably had about 2 or 3 children each day that haven’t had a pedometer on for various reasons, oh I forgot it, I left it at home, or it has fallen down the back of the cupboard, or it got lost on the field out somewhere. That’s been a bit of an issue because those children then haven’t had anything to record down’.

Teachers in general made positive comments regarding the website. More specifically, they appraised the presentation of the website, the layout and the games included in it, which, as most teachers stressed, were a strong motive for the students.

'Well certainly the website looks quite good, although some of the children have had difficulties actually just inputting their data and getting new targets'.

Teachers mentioned that recording steps and receiving new targets and certificates increased students' engagement in the project. On the other hand as it was the case in the students' interviews, they mentioned some problems that occurred with the website such logging on and recording steps. The following two statements illustrate this point:

'The biggest problem that we had when we were entering their data into the computer was that it did not give them a target straight away and so the target was coming up as the same as it was last week'.

'...Initially some children's passwords didn't work and when they were, when their targets weren't coming up, it was like everybody was getting the same target, there was no kind of variation and the children were saying this can't be my target its not realistic, my data's different from so and so's, so I don't really know what was happening there'.

'...Initially we've had a technician had to come and set it up because the user names and the passwords were a bit complicated for the children to remember and enter into it, but once half of the class go on all at the same time to try and log on all the site starts to jam up and that and we can't always get it working properly so that has caused a bit of a problem...'

7.2.4 Maintenance of healthy lifestyle

The teachers stressed their willingness to maintain the activity levels achieved during the programme:

'I also joined the gym myself... so I try to keep up fitness as well, which is a good reason'.

'...I think that because at this age group they tend to get quite lazy about doing things, that I think now focusing on it means that when they go on to their secondary schools there are going to be quite keen to carry on joining new clubs'

Teachers stressed that the programme implementation would not be an easy task due to timetabling and teaching responsibilities. They argued that support should be sustained if they were to maintain activity levels; especially when it comes to students' engagement in physical activities.

8 Discussion

Overall, the Schools on the Move project met its prime objective – to increase the amount of physical activity, particularly walking, undertaken by young people. This is evidenced primarily by the progressive increase in the step counts of students throughout the project. When comparing week 23 with baseline, an average increase of 5584 steps is observed. Questionnaires completed by case study school students suggested that the majority of students (51%) also perceived themselves to have increased their physical activity levels from the beginning of the school year.

Generally, students were enthusiastic about maintaining their walking in the future, with average scores for ‘future walking intentions’ being in the upper range of the scale. The qualitative data indicated that the students increased their daily steps not only in school hours but also outside school hours and during the weekends. The students’ family members were also influenced to some extent by the project. They improved their knowledge of pedometers, and were exposed to an increased number of physical activity opportunities (created by students) during weekends. Many students suggested that during the project, a ‘whole family approach’ to physical activity developed through visiting local clubs and by going for country walks especially during the weekends.

The project received positive evaluations from both teachers and students. The participation of teachers in the pedometer intervention was a strong element in the success of the project. Teachers acted both as organisers and providers of help and support for students. They also acted as an important role model for students. Sharing similar experiences with the teachers was a powerful way to motivate students to participate in the programme and enabled the creation of a friendly and supportive environment.

The project was equally successful for both boys and girls. Although boys were at all times recording higher step counts than the girls, when self-reporting the extent to which they felt their physical activity levels had increased, a higher number of boys reported increasing their physical activity levels a lot. Questionnaire data suggested that boys were more likely to report that they would ‘definitely’ walk 15000 steps per day in the coming year, than girls were to report that they would walk 12000 steps. If possible, follow-up analyses with this same sample would be particularly informative regarding whether students kept their activity levels up in general, and whether boys were truly more likely to do so than girls.

The project, in terms of data entry, was more successful in primary schools. Both primary and secondary schools witnessed a very large and steady dropout rate throughout the weeks, with relatively few students entering data in any given week. The percentage of students who entered

data was lower in secondary than in primary schools, both when looking at students initially registered on the website, and when looking at those who entered data at baseline.

The YST documentation focused particularly on the most sedentary students participating in the project. Therefore, we further examined whether differences in step counts existed at various time points during the project between students who had been either more or less active at baseline. The rationale for this was that if the project was to be successful for sedentary students in particular, then these students should increase their step counts more than students who were already more active. Results suggest that the project was equally effective in improving activity levels of both low-active and high active students, with no gender differences. However, this analysis should be interpreted with caution, given the very low number of students providing data at all measurement points.

The examination of changes from baseline until the mid-point of the project (week 12) revealed that the students classed as low-active at baseline had increased their step counts to a greater extent than high active students. Moreover, the questionnaire data suggest that the project particularly engaged the more sedentary students. The low-active students also rated the project as being more valuable, useful, interesting and enjoyable compared to high-active students, and were also less likely to report negative reactions to the project. Low active students also reported stronger intentions to carry on walking after the end of the project. Thus, while high-active students at all times remained more active than those initially classified as low-active, there is some evidence to suggest that the project particularly appealed to and increased the activity levels of the more sedentary students. One important caveat of this conclusion, however, is that while girls were more likely to be low-active than boys, girls also reported lower levels of attraction to the project compared to boys. Girls were less likely to find the project fun, useful, and interesting, and they also gave the website a lower rating than the boys. Thus, there appears to be a need to make the project more attractive to girls.

Questionnaire data from the six case study schools indicated that the project can only to a limited extent be considered as having met its second objective – to raise knowledge and awareness about the role of walking and physical activity in maintaining health and well-being. On the one hand, interviewees stressed that the awareness of healthy lifestyles, healthy eating and physical activities improved as part of the project. However, questionnaire data suggested that while awareness and talk about physical activity in the participating schools may have increased, actual knowledge about physical activity guidelines could be considered low.

A large proportion of students (54%) were unable to correctly identify the amount of activity that a student should do each day to accrue health benefits. An even larger proportion of students (73%) were unable to answer correctly regarding correct figure for girls and a similarly large proportion of students (74%) were unable to identify the correct figure for boys. In general, boys appeared more knowledgeable about physical activity recommendations than girls. This might reflect girls being generally less interested in the project compared to boys. The qualitative data further suggested the role of project in enhancing the schools' ethos towards active lifestyles. It seems that the benefits of the intervention extended beyond the students to their social networks which were indirectly exposed to the messages of the project.

Exploration of specific dimensions of the project, using self-determination theory (SDT; Deci & Ryan, 1985) proved enlightening. This theory proposes that humans perform and thrive in situations where the needs for autonomy (perceiving that one has choice and is not coerced), competence (feeling like one can effectively impact one's situation and not feeling out of control), and relatedness (feeling meaningfully related to others and not lonely) are satisfied. Using the Intrinsic Motivation Inventory (IMI; Ryan, 1982), we were able to establish that on the whole, students in the project felt only somewhat autonomous and only somewhat competent. On the other hand, students felt 'fairly' related to one another. No gender differences were observed. These findings are further supported by interview data in which students praised the support from teachers and stressed that working closely with their friends and having common goals encouraged them to increase their walking levels.

Students reported moderate scores for interest and enjoyment and for value and usefulness. For these aspects, however, boys scored more highly than girls, again supporting our suggestion that further implementation of project should consider how to appeal more to girls.

Previous research in exercise and in physical education has confirmed that greater needs satisfaction results in more intrinsic forms of motivation (e.g., Deci & Ryan, 1985; Edmunds, Ntoumanis, & Duda, in press; Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2003). Students who report greater scores for autonomy/perceived choice, perceived competence, and relatedness should be more likely to report intrinsic enjoyment as the main reason for participation and less likely to report amotivation. More intrinsic forms of motivation should then, in turn, enable students to enjoy the project more, increase their step counts more (Deci & Ryan, 1985; Edmunds et al., in press; Hagger, Chatzisarantis, & Biddle, 2002; Ntoumanis, 2001; Wilson, Rodgers, Blanchard & Gessell, 2003), and form stronger intentions for future activity. Data from our evaluation largely conformed

to these theoretical predictions. Specifically, greater needs satisfaction (feeling competent, feeling autonomous and feeling related) was significantly and positively related to intrinsic motivation. In turn, intrinsic motivation was significantly and positively related to interest and enjoyment, value and usefulness, and to future walking intentions. Students who reported greater interest/enjoyment and value/usefulness had also increased their step count more by the mid-point of the project.

9 Points for consideration

The main weakness of relating to the quantitative data is the very small number of students supplying complete sets of data at all measurement points throughout the project. Overall, the website had 5832 names registered when it was first obtained by the research team, but only 1966 students entered sufficient data to be included in our baseline analyses. One week into the project approximately one quarter of these students entered insufficient data to warrant inclusion in further analyses. Further attrition occurred (almost another quarter) by the third week and throughout the rest of the project.

Similarly, the case study school visits resulted in 490 valid questionnaires with associated parental consent. However, only 322 questionnaires contained sufficient data to be included in our analyses.

Two important messages should be taken from these low response rates. Firstly, the analyses suffer from high probability of response bias – in other words, our analyses can not be considered to be representative of the whole population of students who participated in the Schools on the Move project. It is possible that students who were least interested in the project did not provide any data from either their pedometers or in the questionnaires. Secondly, several analyses that would have been informative for the evaluation could not be performed – again due to the low response rate. For example, it was not possible to examine whether interest/enjoyment and value/usefulness ratings were related to step count increases across the project as a whole, only for mid-project progress.

The interview data suggested that the pedometers were useful as both an educational and motivational tool (Oliver, Schofield, & McEvoy, 2006; Schofield, Mummery, & Schofield, 2005). Both students and teachers increased their knowledge regarding the healthy levels of physical activity. They developed strategies and ways of increasing their daily walking and they used the pedometers as an incentive to accumulate the required levels of everyday activity.

10 Recommendations

The evaluation of the Schools on the Move project highlighted some positive outcomes and provided a useful insight on delivery and process factors which contributed to the achievement of its prime objective – to increase the amount of physical activity, particularly walking, undertaken by young people.

Recommendations for further improvement of the Schools on the Move project include action points on the following:

Management and quality control:

1. The very low response rates achieved in this project stress the need for more careful design, management and quality control monitoring of quantitative data collection procedures.
2. Computer access in schools should be improved. This is important because many students reported that the website was a strong motivating factor to achieve their daily targets.
3. Issues such as the provision of sufficient numbers of pedometers, taking into account the high volume of pedometers that students either lose or break accidentally, and the review of the available models in order to identify the best choice in terms of value/accuracy should be carefully addressed.

Support:

1. More support should be given to individuals/schools in the initial stages of the project.
2. Carefully designed training for directors and coordinators should be provided. The training should include information on the programme components (the use of pedometers and website) and a detailed health behaviour change component which needs to cover areas such as individual goal setting, readiness to change and motivational techniques with a particular focus to intrinsic motivation enhancement.
3. More frequent support from YST in the form of several visits at different times during the project should be considered. This would help teachers to address issues and problems at an earlier stage and to minimise any adverse impact.

Motivational Strategies:

1. The web-based target setting procedures for the student should ensure that the provision of each target is based on personal recorded steps rather than generic targets that might demotivate less active students.

2. Students should be encouraged to adapt their step targets to suit their own needs and to choose their favourite physical activities and challenges they want to take part in.
3. Teachers should focus on empowering students and providing them with support and information in order to enable students to set appropriate, desirable and challenging targets.
4. Students should be involved in individually-relevant goal setting and personal improvement, rather than an emphasis on competitiveness.
5. Tasks should be considered that require cooperation, by encouraging students to walk together rather than alone, and by using flexible groupings to encourage students to interact in new ways (e.g. across sets/forms, or perhaps across schools).
6. Rewards can be given for relative and self-referenced improvement rather than for absolute achievement.

Targeting specific groups:

1. The school-based procedures and the website should be made more appealing to girls.
2. The programme should be carefully evaluated and re-designed to become more appealing to secondary school students. A range of challenging tasks, tailored to their interests and preferences could help in improving the rate of recorded entries.
3. Opportunities for involvement on a family level should be provided as family involvement seems to be an important motivator for adoption of active lifestyle.
4. The provision of more extra-curricular clubs covering a diversity of sports could encourage students to increase their physical activity levels, especially high active students who might not be sufficiently motivated by using the pedometer to increase walking levels as they are already involved in more vigorous activities.

11 References

- Deci, E. L., & Ryan, R. M., (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press.
- Department of Health (2004). *At least five a week: Evidence on the impact of physical activity and its relationship to health*. London: Department of Health.
- Doak, C. M., Visscher, T. L. S., Renders, C. M., & Seidell, J. C. (2006). The prevention of overweight and obesity in children and adolescents: A review of interventions and programmes. *Obesity reviews*, 7, 111–136.
- Edmunds, J. K., Ntoumanis, N., & Duda, J. L. (in press). A test of self-determination theory in the exercise domain. *Journal of Applied Social Psychology*.
- Fox, K. R. (2003). Childhood obesity and the role of physical activity. *Journal of the Royal Society for the Promotion of Health*, 124 (1), 34–39.
- Gunell, D.J., Frankel, S.J., Nanchahal, K., Peters, T.J., & Smith, G.S. (1998). Childhood obesity and adult cardiovascular mortality: A 57-y follow-up study based on the Boyd Orr cohort. *American Journal of Clinical Nutrition*, 67, 1111–1118.
- Hagger, M. S., Chatzisarantis, N. L. D., Biddle, S. J. H. (2002). The influence of autonomous and controlling motives on physical activity intentions within the Theory of Planned Behaviour. *British Journal of Health Psychology* 7, 283-297.
- Le Compte, M.D., & Preissle, J. (1993). *Ethnography and qualitative design in educational research*. San Diego, CA: Academic Press.
- Markland, D., & Tobin, V. (2004). A modification of the behavioural regulation in exercise questionnaire to include an assessment of Amotivation. *Journal of Sport and Exercise Psychology*, 26, 191 – 196.
- Miles, M. B. and A. M. Huberman (1994). An expanded source book: Qualitative data analysis. Thousand Oaks, CA, Sage.
- Must, A., Jacques, P. F., Dallal, G. E., Bajema, C. J., & Dietz, W. H. (1992). Long-term morbidity and mortality of overweight adolescents: A follow-up of the Harvard Growth Study of 1922 to 1935. *New England Journal of Medicine*, 327 (19), 1350–1355.
- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology*, 71, 225-242.
- Oliver M, Schofield G, McEvoy, E. (2006). An integrated curriculum approach to increasing habitual physical activity in children: A feasibility study. *Journal of School Health* ,76, 2, 74-79.

- Reilly, J. J., Methven, E., McDowell, Z. C., Hacking, B., Alexander, D., Stewart, L., & Kelnar, C. J. H. (2003). Health consequences of obesity. *Archives of Disease in Childhood*, 88, 748–752.
- Ryan, R. M. (1982). Control and information in the interpersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450 – 461.
- Ryan, R. M., Frederick, C. M. L., Lepes, D., Rubio, N., & Sheldon, K. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology*, 28, 335 – 354.
- Schofield L, Mummery WK, Schofield G. (2005). Effects of a controlled pedometer-intervention trial for low-active adolescent girls. *Medicine and Science in Sports and Exercise*, 37, 8, 1414-1420.
- Scottish Intercollegiate Guidelines Network (2003) *Management of obesity in children and young people: A national clinical guideline*. Edinburgh: SIGN.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in Physical Education: Using constructs from self-determination theory and achievement goals to predict physical activity intentions. *Journal of Educational Psychology*, 91, 97 – 110.
- Summerbell, C. D., Waters, E., Edmunds, L. D., Kelly, S., Brown, T., & Campbell, K. J. (2005). Interventions for preventing obesity in children. *The Cochrane Database of Systematic Reviews*, Issue 3.
- Sproston, K., & Primatesta, P. (2004). *Health Survey for England 2002: The health of children and young people*. London: The Stationery Office.
- Veugelers, P. J., & Fitzgerald, A. L. (2005). Effectiveness of school programs in preventing childhood obesity: A multilevel comparison. *American Journal of Public Health*, 95, 432–435.
- Wilson, P. M., Rodgers, W. M., Blanchard, C. M., & Gessell, J. (2003). The relationship between psychological needs, self-determined motivation, exercise attitudes and physical fitness. *Journal of Applied Social Psychology*, 33, 2373 – 2392.

12 Appendices



Evaluation of the “Schools on the Move” project

Information sheet for teachers

Dear Sir/Madam

You are invited to take part in an evaluation study, which is being conducted by the London Sport Institute at Middlesex University. Before you decide whether you would like to participate, it is important that you understand the purpose of the research and what it will involve. Please take the time to read the following information carefully and discuss it with colleagues or school management, if you wish. If there is anything that you do not understand and would like further clarification, or you have any queries, please contact a member of the research team. Please take your time in deciding whether or not you would like to take part.

What is the purpose of the study?

The purpose of this study is to evaluate the “Schools on the Move” project that is currently being run by the Youth Sport Trust in 51 schools throughout England, in terms of its effectiveness at increasing physical activity in children aged 9 to 13.

Do I have to take part?

Participation is entirely voluntary, and it is up to you whether or not you take part. You are free to withdraw from the evaluation project at any time.

What will I be asked to do if I take part?

We will invite you to an interview and a discussion group, to be held on your school-site in order to talk about, and share your experiences of the “Schools on the Move” project. You are free to answer only the questions that you want to answer, and there are no right or wrong answers. We are interested in your personal experiences and opinions. These discussions and interviews will be tape-recorded (with your permission) and transcribed. Tapes and transcripts will only be accessible to members of the research team for analysis purposes.

All information obtained from the interviews and discussions will be strictly anonymous, and therefore non-attributable to anyone taking part.

This information will help us to evaluate the effectiveness of the project and to identify potential areas for improvement.

What are the benefits of taking part?

Your experiences will help us to evaluate the “Schools on the Move” project. The information derived from this evaluation will generate new ideas and strategies which could help the design and provision of more targeted and effective physical activity initiatives.

How long will data be stored?

Any data generated during this research will be stored at the London Sport Institute at Middlesex University in secure, password-protected disc-drives, accessible only to the researchers listed below, and to the Youth Sport Trust, in accordance with the Data Protection Act 2003. Data will be stored for a 4 year time period, after which it will be destroyed.

What if something goes wrong?

In the unlikely event that you, or the children in your class, suffer any adverse effects from participation in this research, there are no special compensation arrangements. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study you may wish to contact:

Middlesex University School of Health and Social Sciences Ethics Committee
Chair: Rhona Stephen, r.stephan@mdx.ac.uk 020 8411 6985

Who has reviewed the study?

This research has been approved by the Middlesex University Health Studies Ethics Sub-Committee.

Who are we?

Sanna Nordin
020 8411 5023
s.nordin@mdx.ac.uk

Nicholas Smith
020 8411 4142
n.smith@mdx.ac.uk

Dr. Afroditi Stathi
020 8411 4141
a.stathi@mdx.ac.uk

London Sport Institute
Middlesex University
2-10 Highgate Hill
Archway
London
N19 5LW



Evaluation of the “Schools on the Move” project

Information sheet for children

Dear Student

You are invited to take part in a research study, run by the London Sport Institute at Middlesex University.

Please read the information before you decide whether you would like to take part.

Please take your time to read this carefully. If you have any questions, or if there is anything you do not understand, please ask. Your teachers or parents can help.

What is the purpose of this study?

In September, your teachers gave you a pedometer – a gadget that tells you how many steps you take each day. Your teachers also gave you access to a website (www.schoolsonthemove.co.uk) to record the number of steps you take. Your teachers were asked by the Youth Sport Trust to include physical activity in a range of school subjects, for example: mathematics, science, art & design, and geography.

The “Schools on the Move” project is a national scheme to help promote physical activity in children aged 9 to 13, and is organised by the Youth Sport Trust.

We want to know whether the “Schools on the Move” project has changed your physical activity patterns. Some of the things we want to find out are:

Are you doing more activity now than three months ago?

Are you doing less activity now than three months ago?

Do you like the lessons given by your teachers?

Do you think your teachers or the website help encourage your physical activity more?

Do I have to take part?

No, you don’t have to take part. You can say you do not want to take part at any time. It is up to you whether to participate or not.

What will I be asked to do if I take part?

We would like you to complete a short questionnaire about yourself, your interests, and your school life. We may also invite you to take part in an individual or group discussion.

What are the benefits of taking part?

By taking part in this project, we hope that you will discover new ways to be physically active. Also, we want you to enjoy being physically active, and realise that being physically

active is good for you! We want to use the thoughts you have to create new ways to encourage children and young adults to become more active.

Questions you might like to ask us:

What will the group discussions be like?

We will ask 6 children to sit around a table in a room at your school.

We will talk about what you thought about the “Schools on the Move” project.

We will do this during school time and it will last about 1 hour.

We would like to tape-record it, if that is ok with you, so we can remember what you said.

What will the individual discussions be like?

We will talk about what you thought about the “Schools on the Move” project.

We will do this during school time and it will last about 20 minutes.

We would like to tape-record it, if that is ok with you, so we can remember what you said.

What will we do with the tape?

We'll listen to the tape from all the groups and write a book about the views of children and young people.

Will my name be used?

No, we will give you a different name (or number!) so we can write what you said without anyone knowing it's you.

Other questions?

If you have any other questions about this project, your teachers and parents might be able to help. If not, you can email, write or call one of us (our addresses are given below). If you would prefer, ask your parents or teachers to call or write to us instead.

Who Are We?

Sanna Nordin
020 8411 5023
s.nordin@mdx.ac.uk

Nicholas Smith
020 8411 4142
n.smith@mdx.ac.uk

Dr. Afroditi Stathi
020 8411 4141
a.stathi@mdx.ac.uk

London Sport Institute
Middlesex University
2-10 Highgate Hill
Archway
London
N19 5LW



Evaluation of the “Schools on the Move” project

Information sheet for head-teachers and school management team

Dear Sir/Madam

Your school has been invited to take part in an evaluation study, which is being conducted by the London Sport Institute at Middlesex University. Before you decide whether you would like your school to participate, it is important that you understand the purpose of the research and what it will involve. Please take the time to read the following information carefully and discuss it with colleagues if you wish. If there is anything that you do not understand and would like further clarification, or you have any queries, please contact a member of the research team. Please take your time in deciding whether or not you would like to take part.

What is the purpose of the study?

The purpose of this study is to evaluate the “Schools on the Move” project that is currently being run by the Youth Sport Trust in 51 schools throughout England, in terms of its effectiveness at increasing physical activity in children aged 9 to 13.

Do I have to take part?

Participation is entirely voluntary, and it is up to you whether or not you take part. You are free to withdraw from the evaluation project at any time.

What is involved in this research?

The research is composed of four aspects:

- Analysis of daily step counts taken by each child and teacher participating in the “Schools on the Move” project.

- Interviews or group discussions held with children participating in the “Schools on the Move” project.

- Interviews or group discussions held with teachers participating in the “Schools on the Move” project.

What is my involvement as the Head Teacher of the school?

All we ask of you, and the school management team, is to facilitate the conduct of our research. This will involve two areas:

- Help us to disseminate consent forms, information sheets, and other printed material to the children taking part, and their parents.

- If selected for further in-depth study, to facilitate the conduct of individual interviews and group discussions, involving either teaching staff or students, to be conducted during school time.

How will this impact on the daily running of the school?

It is our intention to minimise any disruption to the daily-life of the school, the teachers, and the students. We are mindful of the fact that your school has already opted to take part in implementation of the “Schools on the Move” project, and that this may have caused some disruption, and changes to teaching methods. However, we believe that the research will not place any additional strain on your resources, and in most cases, will simply involve handing out information packs to the children and teachers taking part. We will only be approaching 6 of the schools for in-depth study with group discussions and interviews.

What are the benefits of taking part?

The experiences of your staff and the children will help us to evaluate the “Schools on the Move” project. The information derived from this evaluation will generate new ideas and strategies which could help the design and provision of more targeted and effective physical activity initiatives.

How long will data be stored?

Any data generated during this research will be stored at the London Sport Institute at Middlesex University in secure, password-protected disc-drives, accessible only to the researchers listed below, and the Youth Sport Trust, and in accordance with the Data Protection Act 2003. Data will be stored for 4 years, after which it will be destroyed.

What if something goes wrong?

In the unlikely event that you, or the school, suffer any adverse effects from participation in this research, there are no special compensation arrangements. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study you may wish to contact:

Middlesex University School of Health and Social Sciences Ethics Committee
Chair: Rhona Stephen, r.stephan@mdx.ac.uk 020 8411 6985

Who has reviewed the study?

This research has been approved by the Middlesex University Health Studies Ethics Sub-Committee.

Who are we?

Sanna Nordin
020 8411 5023
s.nordin@mdx.ac.uk

Nicholas Smith
020 8411 4142
n.smith@mdx.ac.uk

Dr. Afroditi Stathi
020 8411 4141
a.stathi@mdx.ac.uk

London Sport Institute
Middlesex University
2-10 Highgate Hill
Archway
London
N19 5LW



Evaluation of the “Schools on the Move” project

Information sheet for parents

Dear Sir/Madam

You and your child have been invited to take part in an evaluation study, which is being conducted by the London Sport Institute at Middlesex University. Before you decide whether you would like to participate, it is important that you understand the purpose of the research and what it will involve. Please take the time to read the following information carefully and discuss it with friends, relatives, colleagues or school management, if you wish. If there is anything that you do not understand and would like further clarification, or you have any queries, please contact a member of the research team. Please take your time in deciding whether or not you would like to take part.

What is the purpose of the study?

The purpose of this study is to evaluate the “Schools on the Move” project that is currently being run by the Youth Sport Trust in 51 schools throughout England, in terms of its effectiveness at increasing physical activity in children aged 9 to 13.

Do we have to take part?

Participation is entirely voluntary, and it is up to you and your child whether or not you take part. Both you and your child are free to withdraw from the evaluation project at any time.

What do we have to do?

First, we would like you to read and review the enclosed information. We would also like to explain the purpose of this study, what is involved, and what your child may be asked to do as part of the study. We would like you to provide consent for your child to take part in the research, and for you to complete a section of the questionnaire.

What is involved in the research?

Your child has been asked to wear a pedometer by the Youth Sport Trust to measure daily steps taken as part of the “Schools on the Move” project. To fully evaluate this project, there are four aspects to the research. The first three aspects are for all participants:

- Comparison of the daily steps taken throughout the course of the project

- Questionnaires for your child to complete

- Questionnaire for you (as the parent or guardian) to complete

Some children will also be invited to take part in the fourth research aspect:

- Group discussions lasting 1 hour, or informal interviews lasting 20 minutes to explore their personal experiences and opinions about the “Schools on the Move” project.

What are the benefits of taking part?

All information we gain from the pedometer data, questionnaires, and interviews or discussion groups will help us to evaluate the “Schools on the Move” project. The information derived from this evaluation will generate new ideas and strategies, which

could help the design and provision of more effective physical activity initiatives targeting children and young people.

How long will data be stored?

Any data generated during this research will be stored at the London Sport Institute at Middlesex University in secure, password-protected disc-drives, accessible only to the researchers listed below, and the Youth Sport Trust, and in accordance with the Data Protection Act 2003. Data will be stored for 4 years, after which it will be destroyed.

What if something goes wrong?

In the unlikely event that you, or your child, suffer any adverse effects from participation in this research, there are no special compensation arrangements. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study you may wish to contact:

Middlesex University School of Health and Social Sciences Ethics Committee
Chair: Rhona Stephen, r.stephan@mdx.ac.uk 020 8411 6985

Who has reviewed the study?

This research has been approved by the Middlesex University Health Studies Ethics Sub-Committee.

Who are we?

Sanna Nordin
020 8411 5023
s.nordin@mdx.ac.uk

Nicholas Smith
020 8411 4142
n.smith@mdx.ac.uk

Dr. Afroditi Stathi
020 8411 4141
a.stathi@mdx.ac.uk

London Sport Institute
Middlesex University
2-10 Highgate Hill
Archway
London
N19 5LW



School ID:
Participant ID:

xx
xxxxxx

CONSENT FORM

Evaluation of the “Schools on the Move” project

		Please Initial Box
1)	I confirm that I have read and understood the information sheet for the above study and have had the opportunity to ask questions.	<input type="checkbox"/>
2)	I understand that my participation is entirely voluntary and that I am free to withdraw at any time, without giving any reason, and without my legal rights being affected.	<input type="checkbox"/>
3)	I would like to take part in this study and (if selected) to take part in either interviews or group discussions to be held during school time	<input type="checkbox"/>

Name of participant

Date

Signature

Researcher

Date

Signature

Please keep a copy of this form for your own personal records.



School ID: xx
 Participant ID: xxxxxx

CONSENT FORM

Evaluation of the “Schools on the Move” project

		Please Initial Box	
		Child	Parent/Guardian
1)	I confirm that I have read and understood the information sheet for the above study and have had the opportunity to ask questions.	<input type="checkbox"/>	<input type="checkbox"/>
2)	I confirm that my child has read and understood the information sheet for the above study and has had the opportunity to ask questions.	<input type="checkbox"/>	<input type="checkbox"/>
3)	I understand that my child’s participation is entirely voluntary and that he/she is free to withdraw at any time, without giving any reason, and without my legal rights being affected.	<input type="checkbox"/>	<input type="checkbox"/>
4)	I consent for my child to take part in this study and (if selected) to take part in either interviews or group discussions to be held during school time	<input type="checkbox"/>	<input type="checkbox"/>

 Name of child taking part

 Date

 Signature of child

 Name of parent or guardian
 Providing consent

 Date

 Signature

 Researcher

 Date

 Signature

Please keep a copy of the