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Fifth Physical Education, Physical Activity and Youth Sport (PE PAYS) Forum

A Shared Vision for Physical Education, Physical Activity and Youth Sport

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Preface

The Physical Education, Physical Activity and Youth Sport (PE-PAYS) Research Centre was formally launched in October of 2005 at the University of Limerick. In collaboration with researchers at the University of Limerick and others from around the country, the PE-PAYS mission was established with the intent of advancing the physical and social wellbeing of Irish children and youth through the creation and dissemination of knowledge on physical education, physical activity, and youth sport that informs both policy and practice. A multidisciplinary approach to researching children and young people's engagement in physically active lifestyles is central to this work as PE-PAYS researchers strive to help understand young people's engagement with physical activity and solve challenges that inhibit this engagement. The development and dissemination of evidenced-based best practice of teacher and coach education, in-school, after-school, and community projects focused on increasing young people's activity levels and healthy lifestyle choices are key foci of this research effort.

The fifth PE-PAYS Research Forum, *A Shared Vision for Physical Education, Physical Activity and Youth Sport,* was held on the 17th and 18th June 2010 at the University of Limerick. The forum included opportunities to engage with oral research presentations, physical activity workshops, and further discussion and sharing of views at a closing panel discussion entitled *'Working together to promote a shared vision for physical education, physical activity and youth sport: Moving the agenda forward'*.

This is the fourth year that those who presented oral presentations were invited to contribute their forum papers to the proceedings. The papers included here are from those authors who agreed to re-work their presentations for sharing with a wider audience. We would like to thank those who have contributed their work to this publication and the reviewers for their useful comments in enhancing the papers. Thank you also to the Irish Sports Council for their continued encouragement and support, which has enabled the publication of 2010 Research Forum Proceedings.

Details of all projects and ongoing events of the PE-PAYS Research Centre can be found on the web-site http://www.ul.ie/pepays/.

Eimear Enright & Daniel Tindall
Editors of 2010 PE-PAYS Proceedings

Welcome

On behalf of the Irish Sports Council I welcome the publication of the proceedings of the Fifth Forum of the Physical Education, Physical Activity and Youth Sport (PEPAYS) Forum which was held in the University of Limerick in June 2010.

What is once again particularly apparent from the proceedings is the range and diversity of the issues being examined and the quality of the research work being undertaken. The papers reported here cover issues national and local dealing with sport, PE, PA and sedentarism. They cover the perspectives of the range of individuals involved in children's activity from the children themselves to the teachers, other professionals and volunteers. The diversity of research interests fully acknowledges and honours the "PEPAYS" title adopted by the promoters when they initiated the Forum in 2005.

This is the 4th year for the Council to support the work of the Forum. I think it is important that we do so as we try to understand more fully the complex array of issues affecting participation in sport and physical activity throughout the life course.

It is very appropriate that the results from the 1st report of the Children's Sport Participation and Physical Activity features so strongly in the proceedings. The research for the report was commissioned by the Council to assess and understand the participation by children and youth in PE, sport and PA, very much in keeping with the ethos of the PEPAYS concept.

The Council has made a long-term strategic commitment to increasing participation in sport and physical activity throughout the Irish population. This strategic commitment must be underpinned by a strong information and knowledge base. The challenge for all of us working in a policy and programme environment is to translate the insights from this type of research into action. In this respect I particularly like the way the "Girls n Golf" project has been adapted over time in response to an ongoing evaluative approach by its promoters.

The Council has worked with many of the researchers represented here and we are well aware of the quality of their work. I would like to acknowledge the contribution of all in their efforts to get a better understanding of the important issues affecting children's participation in sport, physical education and physical activity.

I would also particularly like to acknowledge the work of the promoters of the PEPAYS concept, Mary O'Sullivan, Ann MacPhail and Deborah Tannehill and their colleagues in the University of Limerick. In developing the Forum they have provided an ideal opportunity for many researchers in different but connected fields to come together to share and exchange views on their respective projects.

I look forward to working with the PEPAYS group to ensure that these proceedings are widely disseminated to relevant parties involved in sport and physical education throughout Ireland.

Peter Smyth
Director of Research
Irish Sports Council

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THE CHILDREN'S SPORT PARTICIPATION AND PHYSICAL ACTIVITY STUDY (CSPPA)

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INTRODUCTION:

The Children's Sport Participation and Physical Activity study (CSPPA) was funded by the Irish Sports Council. It was a unique multi-centre study undertaken by Dublin City University, University of Limerick and University College Cork. It brought together expertise from physical education, sport and coaching studies and physical activity for health. The purpose of the study was to:

i)   provide a national database of physical activity, physical education and sport participation levels of children and youth in Ireland,

ii)   assess indices of health and fitness in a sub-sample of the target population, and

iii) examine the complex interactions of factors influencing participation in physical activity, physical education and sport.

BACKGROUND AND RATIONALE:

Physical activity is any bodily movement that is produced by the contraction of skeletal muscle and that substantially increases energy expenditure (Casperson, Powell & Christensen, 1985). It includes active living, active play, sport, physical education and active transport. Current Department of Health and Children guidelines recommend that children and youth participate daily in at least 60 minutes of moderate to vigorous intensity physical activity ($\geq$ 60 min MVPA). This activity should be developmentally appropriate, involve a variety of activities and be enjoyable (DHC&HSE, 2009).

Physical activity is important to children's current and future health, and adherence to the physical activity guidelines produces a range of direct and indirect benefits (Hallal, Victora, Azevedo, & Wells, 2006; Twisk, 2001). It assists in the control of body weight by increasing energy expenditure, this is important in teaching children and young people how to achieve a healthy 'energy balance', and avoid developing adult obesity (Pate et al, 2002). It reduces the risk of developing premature cardiovascular disease, type-2 diabetes, metabolic syndrome and some site specific cancers (Anderson et al, 2006; Boreham et al, 2001). Weight bearing physical activity is important in bone formation and remodelling (Field et al, 2001). Participation in regular health enhancing physical activity reduces depression and anxiety (especially in shy children), enhances mood, self-esteem and quality of life

(Tremblay, Inman, & Willms, 2000). It is also known to reduce rule-breaking behaviour, to improve attention span and classroom behaviour, and can positively affect academic performance (Castelli et al, 2007; Lindner, 2002). Involvement in sport and physical education can play a significant role in the enrichment of a child's social life and the development of social interaction skills (Sibley & Etnier, 2003). A child who emerges from school with confidence in their physical body and skills and who has been exposed to positive experiences in physical activity is more likely to adhere to an active lifestyle as they age.

Worldwide less than one third of young people are sufficiently active to benefit their current and future health (WHO, 2002). Females are less active than males. In addition, the proportion of children and young people who walk or cycle to school, a source of daily physical activity, is declining dramatically (Beck & Greenspan, 2008). Physical inactivity is a major underlying cause of death, disease and disability (WHO, 2003). There is increasing concern at the rapidly decreasing levels of fitness in children and youth (Salis & Patrick, 1994). Preliminary data from a World Health Organisation (WHO) study on risk factors identified a sedentary lifestyle as one of the ten leading global causes of death and disability, with more than two million deaths each year attributable to physical inactivity (WHO, 2006). Children and young people need to be encouraged to reduce the amount of time spent in sedentary activities such as TV and video viewing, and playing computer games especially during daylight hours.

In addition to mortality, morbidity and quality of life costs, inactivity affects national economies. The WHO estimates that physical inactivity costs between €150-300 per citizen per year (WHO, 2006). These figures were based on a number of European studies where the annual costs – including those to the health system, days of absence from work and loss of income due to premature death – have been estimated to be €3-12 billion (in England) and €1.1-1.5 billion (in Switzerland) (DCMS, 2002). These estimates exclude the contribution of physical inactivity to overweight and obesity, which are estimated to be €9.6-10.8 billion per year in England (Comptroller & Auditor General, 2001). In Ireland, the social aspects of sport alone –volunteering, subscriptions to sports clubs, attendance at sports events and costs of playing sports, including purchasing of equipment – had a combined economic value of €1.4 billion or 1.26 per cent of GNP in 2003. This was estimated to rise to approximately €2 billion annually, if the economic impact of sport tourism was included (Irish Sports Council, 2007).

METHODS:

CSPPA was a cross-sectional study that used self-report surveys, objective measures of physical activity and qualitative interviews to assess participation in physical activity, physical education, extra-curricular and extra-school sport among 10-18 year olds. It was designed as a follow-up to the "School Children and Sport in Ireland" study published by the Economic and Social Research Institute (ESRI) in 2005 (Fahey, Delaney, & Gannon, 2005). Research methods were replicated, where possible, with the addition of certain elements. The quantitative measures included a redesign of the original questionnaire and the use of motion sensors called accelerometers. Basic physical health measures were also collected to examine the relation between physical activity levels and health. These included aerobic fitness

(estimated using a 20 metre shuttle run test), systolic and diastolic blood pressure (BP, mmHg), waist circumference (cm) and body mass index (kg/m^2).

The opinions, attitudes and views on the factors that participants deemed important in influencing their involvement in, or avoidance of, physical activity, physical education or sport were collected through qualitative research. While not shared in this paper, the qualitative data provided a more complete picture of the survey data by allowing participants to share their own voice. It also allowed for a more detailed exploration into why children choose not to participate in physical activity. School administrators (principals/vice-principals) were surveyed to provide data on the challenges they face in the provision of quality physical education and extra-curricular sport. The relationship between school ethos, school sport and physical activity; and how principal and pupil perceptions of these activities differed were also examined.

The paper shared here in the PE PAYS Research Forum Proceedings reflects what we presented at the 2010 forum and represents only a small portion of the total CSPPA study.

Ethics
The study protocol was approved by the Research Ethics Committee at Dublin City University, University of Limerick and University College Cork.

Data Analysis
Data analysis was undertaken using the Statistical Package for Social Sciences (SPSS 15.0). Descriptive statistics were calculated via means, standard deviations, minimums, maximums and percentages where appropriate. Chi square, independent t-tests, Mann-Whitney, one-way ANOVAS with Games Howell post hoc tests were used to examine differences between key elements of the study, such as physical activity level and gender.

The distribution of variables of interest was examined according to household social economic class and area of residence. Household social class was determined by parental occupation and broken into four categories, professional/managerial (SC 1-2), unclassified non-manual and skilled manual (SC 3-4), semi- and unskilled manual (SC 5-6), and unemployed or unknown (SC 7-8). For the post-primary sample, area of residence was measured by each individual selection of one of four possible population density categories to reflect where they lived. The categories were i) a big city >70,000 inhabitants, ii) suburbs, large town or outskirt of city <70,000, iii) town (< 20,000 inhabitants) and iv)village/rural area < 3,000 inhabitants.

All physical health variables were coded into dichotomous health categories (0=unhealthy and 1=healthy) using internationally accepted age- and gender-specific criteria. Each physical health measure was also summed to create a health profile where 0 was least healthy and 4 was most healthy. These classifications are suitable for use by various practitioners, including public health specialists and clinicians, and so allow for meaningful interpretation and comparison of effects at local, national and international level.

Limitations

The CSPPA study is a cross-sectional study; it provides a snapshot of participation levels in physical activity, sport and physical education by children and youth. It relies on self-report data in the questionnaire to assess levels of physical activity participation; however validity checks using motion sensors supported the accuracy of the self-report data. There was a significant, though weak, correlation between the subjective (self-report) and objective (motion sensor) measures of physical activity (N=293, r=0.37, p<0.001), providing some supporting evidence for the validity of the CSPPA data.

The findings from the CSPPA study are compared to the ESRI 2004 study in order to assess change in participation levels over the last five years. For this purpose similar methods and measures were used to allow us to assess and compare trends that emerge from both sets of data. Some caution is noted in making direct comparisons between the 2004 and 2009 data. This is due to the participants being different (for example due to the inclusion of first year students the average age of the CSPPA study was younger than the ESRI study), the schools and regions of the country from which the students were recruited were different and the time of year for data collection moved from October/November (2004) to March-May (2009).

RESULTS: THE PARTICIPANTS

A total of 5397 children from 53 primary and 70 post-primary schools participated in CSPPA. The average age was 13.8 ± 2 years (range 10 to 18 years), 52% were female and 48% male. Post-primary students made up 76% of the sample, and 24% were from primary schools. The breakdown of this sample into the primary and post-primary cohorts can be seen on Table 1.

One hundred and three school administrators (principals or their nominee) completed a questionnaire on school sports participation, facilities and resources. Forty seven were from primary schools and fifty six were from post-primary schools.

Table 1: Demographics of primary and post-primary sample

	Primary (N=1275)	Post-Primary (N=4122)
Age		
-Mean years ± SD	11.4 ± .7 years	14.5 ± 1.7 years
-Range	10-12 years	12-18 years
Gender		
-Boys	55%	48%
-Girls	45%	52%
Social Class		
-SC1-2	40%	44%
-SC3-4	34%	38%
-SC5-6	12%	9%
-SC7-8	14%	9%
Physical or learning disability or illness that affected PA participation	6%	7%

RESULTS: PHYSICAL ACTIVITY AND HEALTH

General Physical Activity
The current physical activity recommendations of $\geq$ 60 minutes of MVPA daily are not beyond the reach of Irish children. Ninety eight percent of primary, and 93% of post-primary children achieved this amount of physical activity once a week. Eighty percent of primary, and 65% post-primary achieved it three days per week, and 39% primary and 25% post-primary engaged in $\geq$ 60 min MVPA on 5 days per week (Figure 1). Only 19% of primary and 12% of post-primary school children met the Department of Health and Children physical activity recommendations – at least 60 minutes daily of MVPA. These proportions have not improved since 2004 (Fahey, Delaney, & Gannon, 2005).
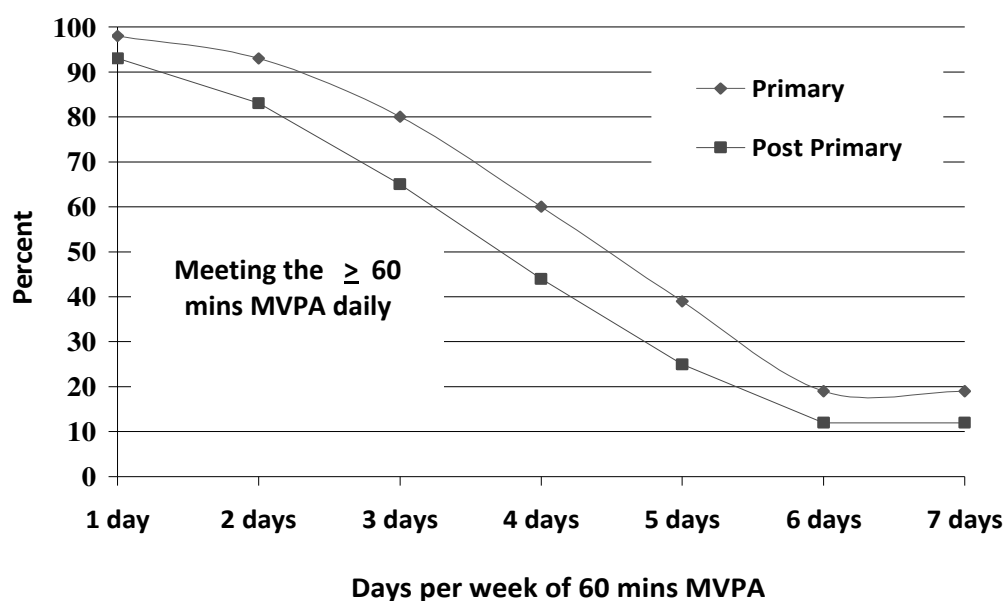

Figure 1: Proportion of participants who undertake $\geq$60 minutes of MVPA per day on 1-7 days per week.

Note: MVPA = Moderate to Vigorous Physical Activity. Guideline $\geq$ 60 minutes daily of MVPA.

Girls were less likely than boys to meet the physical activity recommendations, and the likelihood of meeting the physical activity recommendations decreased with increasing age. Socio-economic status did not influence the proportion of children meeting the physical activity guidelines.

The number of days per week that primary children reached the required 60 minutes of MVPA increased significantly if they took part in extra-school sport or physical activity, or if they actively commuted to school. Involvement in extra-curricular sport was also a significant determinant of minutes of MVPA for girls. Among post-primary pupils' participation in extra-curricular or extra-school sport or activity were significant determinants of daily bouts of $\geq$ 60 minutes of MVPA. Active commuting to school, and minutes of physical education were also significant determinants of participation for females.

Health Outcome

Physical health measures were collected from participants in 25% of schools. Over one thousand (N=1215) participants, 51% male, with an average age of 13.4 $\pm$ 2.1years (range 10-18 years) completed all physical health measures. Thirty three percent of participants were from primary schools, 67% from post-primary. Three out of four participants had a healthy body mass index (77%), 18% were overweight, 4% were obese and 1% were underweight. Similarly, three quarters had a healthy BP (75%) and aerobic fitness (77%). The majority had a healthy waist circumference (85%).

The four health outcomes (fitness, body mass index, blood pressure and waist circumference) were summed to provide a *health profile* for each participant (range=0 to 4; 0 = least healthy to 4 = most healthy). The average health profile for primary pupils was 3.3 $\pm$ 0.8, for post-primary pupils it was 2.9 $\pm$ 1.1. There was a relation between participation in physical activity and the health profile of male and female participants (Figure 2). This applied equally to males and females. The best health profile was found in children and youth who met the current Department of Health and Children physical activity recommendations ($\geq$ 60 MVPA minutes daily) (Hallal, Victora, Azevedo, & Wells, 2006).
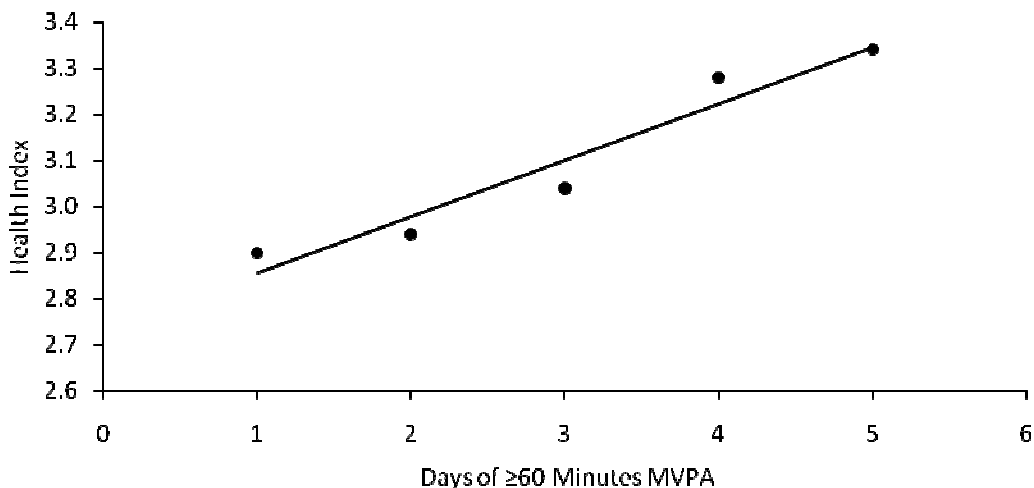

Figure 2: Relation between health profile and the number of days that participants accumulated > 60 minutes of MVPA

PHYSICAL EDUCATION:

Schools are an important setting for young people to take part in, and learn about, physical activity. Through physical education programmes, free play activity and extra-curricular sport, schools can provide time, facilities and guidance for children and youth to safely access physical activity opportunities and develop competence and confidence in an environment that is supported by teachers, parents and friends. Schools are also a setting for under-represented population sub groups to gain access to quality physical activity experiences. However, decreasing physical education programmes in schools, pressure from the school curriculum to reduce time spent in free play, lack of training and senior management support for teachers, particularly at

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the primary level, and the removal of dedicated green spaces or play areas in schools is an alarming trend worldwide (Hardman, 2007; WHO, 2003)

Physical education provides children with learning opportunities through the medium of movement and contributes to their overall development by helping them to lead full, active and healthy lives. "It recognises the physical, mental, emotional, and social dimensions of human movement, and emphasises the contribution of physical activity to the promotion of individual and group wellbeing" (DES, 2003, p. 2). Physical education is a springboard for involvement in sport and physical activities throughout life. It is a source of communication with others and, in addition, can involve an appreciation of the natural environment as well as contributing to moral education and development (Hardman, 2007, p.30).

The physically educated person is physically literate. They have acquired culturally normative skills enabling engagement in a variety of physical activities, which can help them to maintain their health and well-being throughout their lives; they participate regularly in physical activity because they find it enjoyable; and they understand and value physical activity and its contribution to a healthy lifestyle (Hardman, 2007, p. 30). The physical education curricula in Ireland (both primary and post-primary) consists of a number of areas of study called strands, namely athletics, outdoor and adventure activities, aquatics, dance, gymnastics and games (DES, 1999). Each strand has particular characteristics and contributes to the attainment of the overall aim of physical education. Schools are encouraged to adopt a flexible approach in planning for their involvement in physical education, and to offer a range of individual and team based choices to pupils (DES, 1999).

The Department of Education and Science (DES) recommends that every post-primary pupil should have 2 hours of physical education per week, and every primary pupil 1 hour per week of physical education. Average weekly time allocation for physical education across the European Union is 109 minutes (range of 30-240 minutes) with clusters around 60 and 90 minutes in primary schools, and 101 minutes (range 45-240 minutes) with a cluster around 90 minutes in post-primary schools (Hardman, 2007, p. 6). The most physical education time per week is allocated to 9-14 year olds, with time allocation decreasing with increasing age, especially in final years of schooling, when it either becomes an optional subject or it disappears from the timetable (Hardman, 2007).

RESULTS: PHYSICAL EDUCATION

Thirty five percent of primary school pupils received the DES recommended 60 minutes of physical education per week (Figure 3). In comparison, only 10% of post-primary pupils were allocated the DES recommended 120 minutes of physical education per week (Figure 6). Fewer females (8%) than males (12%) received the recommended minimum minutes of physical education per week ($p < 0.001$).
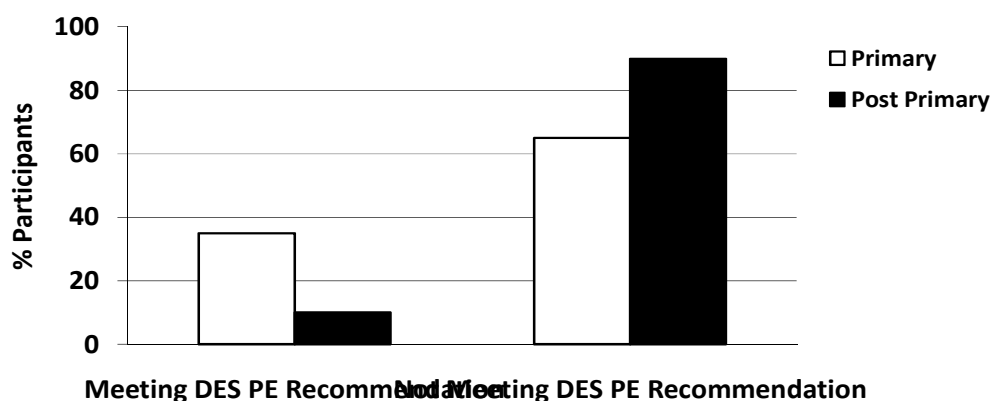
Figure 3: Proportion of primary and post-primary pupils meeting the DES recommended minutes of physical education per week

On average, primary pupils receive 46 minutes of physical education weekly; post-primary pupils receive 77 minutes. Most post-primary pupils receive double class periods of physical education. When compared to the ESRI 2004 survey there was a 5 minute increase in the average weekly minutes of physical education. This increase in minutes of physical education was evident in males and females and across most school years (Table 2). In post primary, fourth year students received significantly more minutes of physical education than all other year groups, and senior students (5th and 6th years) received less minutes of physical education in comparison to all other year groups ($F(5) = 148.6$, $p < 0.001$).

Table 2: Average minutes (mean + SD) of weekly physical education among post-primary students

	Gender Male		Female		ALL	
	2004	2009	2004	2009	2004	2009
1st year	-	85 (22)	-	83 (20)	-	84 (21)
2nd Year	75	79 (26)	65	75 (25)	70	77 (25)
3rd Year	77	85 (13)	62	76 (21)	70	80 (17)
4th Year	121	98 (19)	100	90 (18)	110	94 (19)
5th Year	56	71 (35)	49	57 (31)	52	64 (34)
6th Year	60	59 (35)	49	47 (35)	54	53 (35)
All	75	81 (28)	64	74 (27)	69	77 (28)

Girls receive less physical education time than boys. Senior pupils receive less physical education time than junior pupils. Team games, particularly invasion games, are dominant in primary physical education. There is a mix of team and individual activities in post-primary. Most primary principals (81%) and 29% of post-primary principals reported not having access to an indoor multi-purpose hall on-site for the purpose of teaching physical education. Almost 1 in every 2 principals (45%) felt that their physical education and sport facilities were 'not at all adequate'. More than half of school principals (58%) indicated that a major investment in sports facilities was

needed, and a further 28% said a minor investment was needed to improve their sports facilities.

EXTRA-CURRICULAR SPORT:

Extra-curricular sport refers to the provision of activities outside of the formal physical education curriculum, most often after-school and at lunch times, but also in some schools at weekends and/or before school (Penney & Harris, 1997). For the purpose of this study, extra-curricular sport will include dance, gymnastics and other forms of physical activity that are conducted in the school setting but outside of the formal physical education curriculum. Extra-curricular sport and physical activity are a central focus of the life and identity of many schools and plays a major role in defining what Lynch called the 'hidden curriculum' (the ethos and informal structures and processes that play a large role in defining the character of schools and the overall educational experience encountered by pupils) (Lynch, 1989; Lynch & Lodge, 2002)

The extent and quality of extra-curricular sport varies across schools and is highly dependent on the school ethos, expertise available, staff commitment to the process and availability of resources and facilities. The focus is often on one particular sport, rather than providing a broad programme of activities similar to what is on offer in a physical education programme. Fahey, et al., (2005) found that most children regularly participated in extra-curricular sports or extra-school clubs outside school. They also found that extra-curricular sports were concentrated on a limited range of team based sports and cited soccer, Gaelic football and basketball as the most common extra-curricular sports. Involvement in extra-curricular sport was found to decline with age, and be gender biased (Fahey et al, 2005).

RESULTS: EXTRA-CURRICULAR SPORT

Participation rates in extra-curricular sport participation by primary school children have remained relatively constant since 2004 (Fahey et al, 2005). Sixty three percent participate in extra-curricular sport at least once a week, compared to 62% in 2004 (Table 3). Twenty four percent of children never participate in extra-curricular sport; this was 25% in 2004 (Fahey et al, 2005).

Table 3: Frequency of participation in extra-curricular sport in primary school

	2004	2009
4 or more days (%)	16	18
2-3 days (%)	23	24
1 day a week (%)	23	21
Less often (%)	12	13
Never (%)	25	24
Total (%)	100	100

Note: Participation in extra-curricular sport or physical required help or supervision from a teacher among primary school sample.

The proportion of post-primary school pupils participating in extra-curricular sport, at least once a week has increased from 70% in 2004 to 73% in 2009 (Table 4). The greatest changes were seen in those participating 4 or more days a week; a 9%

increase since 2004, and in those who never participate in extra-curricular sport, a 6% decrease since 2004.

Table 4: Comparison of participation in extra-curricular sport between 2004 and 2009 in post-primary schools

	2004	2009
4 or more days a week (%)	22	31
2-3 days a week (%)	30	26
1 day a week (%)	18	16
Less often (%)	8	11
Never (%)	22	16
Total (%)	100	100

Note: Participation in extra-curricular sport or physical did not require help or supervision from a teacher among post-primary sample.

Boys are more likely to engage in extra curricular sport than girls. Participation in extra-curricular sport decreases with increasing age. Team games, particularly invasion games, are dominant in extra-curricular sport in primary and post-primary schools. Only GAA sports (Gaelic football, hurling, camogie and handball) and swimming show consistent participation levels in interschool competitions at both the primary and post-primary level.

School Ethos and Support
Every principal surveyed felt that extra-curricular sport was important to the ethos of their school, with most describing it as 'very important' (62% primary, 79% post-primary), or 'fairly important' (38% primary, 21% post-primary). However, facilities in school for sport were perceived as inadequate.

Principals were questioned on the support they received from local clubs for coaching or access to facilities. Ninety two percent of primary school principals acknowledged that they receive help from local sports clubs, with 28% saying that they get a lot of help and 64% reporting that they get a little help. Similarly, 80% of post-primary principals reported receiving either a lot (29%) or a little help (52%). Eight percent of primary and 20% post-primary schools indicated that they received no help from local sports clubs. The proportion of post-primary schools receiving 'a lot of help' has doubled from 15% in 2004 to 29% in 2009, and the proportion receiving no help remains unchanged.

Almost half (46%) of the principals indicated that the new restrictions on substitute teachers will impact, in a negative way, on the delivery of extra-curricular sports/activities programme. Comments were centred on less staff meaning less sports teams and limiting of extra-curricular activities in general.

EXTRA-SCHOOL SPORT:

A large amount of youth physical activity occurs outside of the school in extra-school sports clubs (Ross & Gilbert, 1985). The factors supporting and encouraging a positive transition from compulsory school-based physical activity to sport beyond the school gates are poorly understood (Brennan & Bleakley, 1997). Many national governing bodies of sport provide coaching sessions to school-aged children in the

school setting (particularly evident in primary schools). This has resulted in the development of modified forms of their sport which have been successful in recruiting children at a young age. The challenge of stemming the withdrawal of young people from structured clubs during their teenage years (particularly young girls) is daunting.

Extra-school sport clubs are run external to the school system, and are an important element in the institutional structure of sports participation in Ireland (Lunn, Layte, & Watson, 2007). A number of studies have illustrated their popularity and prevalence among children and youth. The 2004 study found that extra school sport had higher participation levels than extra-curricular sport (Fahey et al, 2005). The Health Behaviours of School-aged Children study found that 27% of boys and 23% of girls aged 10-11 years, exercised 4-6 times a week, outside of school (Kelly, Molcho, & Nic Gabhainn, 2009). Similarly, the Growing up in Ireland study found that three-quarters of 9-year-olds were involved in organised sports/fitness clubs outside school (Williams & Greene, 2009).

RESULTS: EXTRA-SCHOOL SPORT

There has been an increase in participation in extra-school sport by primary school children since 2004 (Fahey et al, 2005). Eighty three percent of primary children participate in extra school sport at least once a week; this compares to 81% in 2004 (Table 5). Eleven percent of children never participate in extra-school sport; this was 12% in 2004. All children reported receiving coaching at their club to help them improve in their sport. Table 5 shows that the frequency of participation '4+ days a week' has increased, whilst participation '1 day a week' has decreased since 2004. This statistic reveals that the already active children are now participating more often, however current interventions appear to be having little impact on recruiting new participants.

Table 5: Comparison of participation in extra-school sport between 2004 and 2009 in primary schools.

	2004	2009
4 + days a week (%)	19	25
2-3 days a week (%)	37	39
1 day a week (%)	25	19
Less often (%)	7	6
Never (%)	12	11
Total (%)	100	100

Among post-primary sample, fewer youth reported participation at least once a week in extra-school sport in 2009 in comparison to 2004 (64% vs. 70%, Table 6). Further examination reveals that more youth participated 4 or more days a week and less once a week in 2009 than in 2004. Significantly higher levels of non-participation in extra-school club sport were recorded in 2009 in comparison to 2004 (34% vs. 21%, p<0.01).

Table 6 supports the findings in extra-curricular sport (Table 4) which revealed that among participants there was increased frequency with more youth playing 4+ days a week than was previously recorded. As there are lower numbers available to play

(proportion never participating has also increased), the same children are now playing more often to make up the deficit.

Table 6: Comparison of participation in extra-school sport between 2004 and 2009 in post-primary schools.

	2004	2009
4 + days a week (%)	18	24
2-3 days a week (%)	34	30
1 day a week (%)	18	10
Less often (%)	9	2
Never (%)	21	34
Total (%)	100	100

No gender differences exist in participation levels in extra-school sport at primary school. Boys participate more than girls at post-primary. Participation rates in extra-school sport are lower among children from lower social classes than children from higher social classes. Participation in extra-school sport decreases as children age.

Traditional team sports (mainly the invasion games of Gaelic football, soccer, hurling and rugby) dominate male participation in extra-school sport. There is a mix of individual and team activities for girls (dance, swimming, Gaelic football). Among current participants, by the age of 4, 37% are already a member of an extra-school sports club, by age 7 this jumps to 80% and 93% by age 9. The link between activities offered in school and what is available in the community is varied. Some activities have better pathways and are more successful at recruiting and engaging children than others.

Understanding non-participation in Sport and Physical Activity
To keep fit and for something to do were key motives for participation in extra school sport. Ten percent (N=412) of post-primary pupils chose not to participate in extra-curricular or extra-school sport or physical activity. The reasons given for not taking part are shown on Figure 4. Lack of time was given as the main barrier, followed by feelings of incompetence, not being able to find a sport they liked and no particular reason. Gender differences exist on barrier rating. Males rank time pressure, no reason, and feelings of incompetence as their top three barriers. Females rank time pressure, feelings of incompetence and not liking sport as their main barriers. All barriers increase with increasing age except for 'too expensive' which is equally distributed across all ages.

ACTIVE TRAVEL:

Active travel refers to either walking or cycling some or all of the way to a destination. Inactive travel refers to using motorised transport. The World Health Organisation states that walking can have significant benefits to health and is the nearest activity to perfect exercise (WHO, 2002). The journey to school can be an important means for establishing daily physical activity. This section examines how children travel to and from schools in Ireland to determine how many are walking or cycling on this journey. Data on the relation between active travel and participation in sport is presented.

Active travel to school

Children who actively travel to school have higher levels of physical activity after school (Cooper, Page, Foster, & Qahwaji, 2003; Davison, Werder, & Lawson, 2008), better cardiovascular fitness (Davison, Werder & Lawson, 2008) and higher energy expenditure (Tudor-Locke & Bassett, 2004) than children who are brought to school by car. Promoting active travel not only reduces inactive behaviour, but replaces it with a moderate intensity activity (Alexander et al, 2005).

- Thirty eight percent (31% primary, 40% post-primary) of children and youth walked or cycled to school in 2009. These proportions have increased from 26% (primary) and 30% (post-primary) in 2004.
- Journey durations were on average 15 minutes for active commuters.
- Age related declines seen in other types of physical activity do not exist in active commuting.
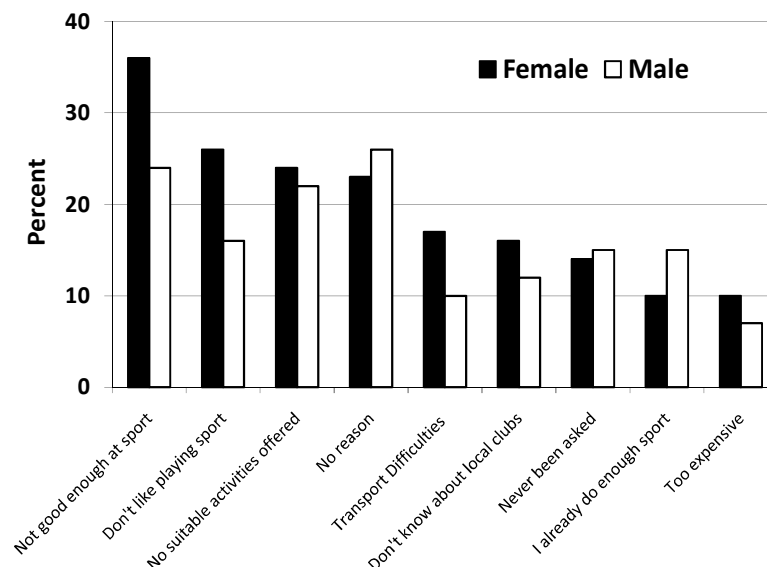- Distance and time were the main barriers to active travel.

Figure 4: Reasons for not taking part in more activities/sport by post-primary youth

Note: Lack of time is not depicted in Figure 4.

SEDENTARY BEHAVIOUR:

More than two million deaths each year are attributable to physical inactivity. Sedentary behaviour is an independent risk factor for at least 35 chronic health conditions. It can promote obesity by displacing physical activity, and tracks better than physical activity from adolescence to early adulthood. Youth need to be encouraged to reduce the amount of time spent in sedentary activities such as TV and video viewing, and playing computer games (WHO, 2004).

Sedentary behaviour refers to activities that do not involve participation in physical activity (Varo et al, 2003). Among youth, these include TV and video viewing, playing computer games, using the internet, talking on the phone, sitting and talking with friends and listening to music (Marshall et al, 2002). Males favour technological sedentary activities such as playing video or computer games, while females favour more social activities such as talking on the phone and sitting talking with friends (Woods, Nelson, O'Gorman, & Moyna, 2007). Although television watching is the dominant activity, it is no longer the only concern. The daily sedentary leisure habits of young people are becoming more complex and varied. It is recommended that the maximum number of minutes of exposure to sedentary screen time (i.e. TV, DVD/Video, and computer) should be ≤ 120 minutes daily (DHA, 2004). However, no recommendations exist for other sedentary behaviours such as sitting during school breaks, talking on the phone, texting or sitting listening to music. Reducing sedentary behaviour as well as promoting physical activity is the key in addressing the inactivity problem among Irish youth:

• Primary school children spend much less time sitting than post-primary youth.
• Few children (1%) meet the recommendation of spending less than two hours daily sitting viewing TV, videos or playing on the computer. This two hour threshold is recommended maximum, once exceeded there is a higher likelihood of developing health problems long term.
• Among post-primary children, active youth spend significantly less time in sedentary behaviour than inactive youth.
• Girls spend significantly more minutes on homework each day in comparison to boys.

RECOMMENDATIONS:

We have one recommendation: INCREASE PARTICIPATION.

Inactivity or low levels of participation in physical activity during childhood and youth can have lasting consequences on one's health and quality of life. We know that children should be moderately to vigorously active for at least sixty minutes daily. We know that this is achievable for most children some of the time, we need it to be achieved by all children most, if not all, of the time.

The CSPPA study highlights that there has been little progress made since the previous study in 2004 in terms of increasing physical activity levels of children and youth. This is an issue that calls for immediate attention through promotion and development of all avenues for physical activity. This will require multi-level partnership, collaboration and a common vision. While government departments should lead on facilitating these changes, they will require commitment from a range of agencies, institutions and organisations to achieve this change. Table 7 outlines the minimum outcomes we consider necessary if our recommendation to INCREASE PARTICIPATION is to be met.

Table 7: Recommendations of the CSPPA Study 2009.

Activity Type	Current Status (2009)	Activity Goal	Timeline	Responsibility
General Physical Activity	19% of primary children meet DHC health goal of ≥ 60min MVPA daily.	Increase to minimum of 30%.	2020	DHC, DES, DTCS, DT, DEHLG.
	12% of post-primary children meet the DHC health goal of ≥ 60 mins of MVPA daily	Increase to minimum of 20%	2020	
Physical Education	35% of primary pupils received the DES minimum requirement of 60 minutes per week	Increase % meeting 60 minute requirement to 50%.	2020	DES
	10% post-primary pupils received the DES minimum of 120 minutes per week	Increase % meeting 120 minute requirement to 20%	2020	
Extra-Curricular Sport and Physical Activity	63% primary children participate at least once a week.	Increase to 73%. Focus on those who participate once a week or less often.	2015	DTCS, DES, DHC.
	24% never take part in extra-curricular activity clubs	Decrease to 20% by broadening range of activities available.	2015	
	73% post-primary pupils participate at least once a week.	Increase to 80%. Focus on those who participate once a week or less often.	2015	
	16% never take part in extra-curricular activity clubs	Decrease to 10% by broadening range of activities available.	2015	
Activity Type	**Current Status (2009)**	**Activity Goal**	**Timeline**	**Responsibility**
Extra-School Sport and Physical Activity	83% primary children participate at least once a week.	Increase to 85%. Focus on those who participate only once a week or less often.	2015	DTCS, DEHLG, DES, DHC.
	11% never take part in community-based sports clubs	Decrease to 10% by broadening range of activities available.	2015	
	64% post-primary pupils participate at least once a week.	Increase to 70%. Focus on those who participate once a week or less often.	2015	
	34% never take part in community-based sports clubs	Decrease to 20% by broadening range of activities available, and offering more for recreational athletes.	2020	
Active Travel	31% primary children walked to school, 1% cycled.	Increase to 40% walking, 5% cycling.	2020	DT, DES, DEHLG, DHC.
	40% post-primary youth walked to school, 3% cycled.	Increase to 50% walking, 5% cycling	2020	
Sedentary Behaviour	Less than 1% of children and youth met the health recommendation of ≤ 120 minutes of sedentary screen time during daylight hours.	Increase this to 10%.	2020	DHC, DES, DT, DTCS, DEHLG.

Note: DTCS – Department of Tourism, Culture and Sport (formerly, Department of Arts, Sport and Tourism). DHC – Department of Health and Children. DT – Department of Transport, DES – Department of Education and Skills, DEHLG – Department of Environment, Heritage and Local Government.

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OBJECTIVELY MEASURED SEDENTARY LEVELS OF A CROSS-SECTION OF LIMERICK ADOLESCENT FEMALES

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INTRODUCTION:

Unlike physical activity, the study of prolonged sitting and sedentary behaviour is a relatively new area of research. Being sedentary refers to being seated or lying or engaging in low energy expenditure activities. Traditionally, sedentary behaviours have been investigated in terms of time spent watching television or playing computer games. However, sedentary behaviours are far more insidious and can include activities such as communication and social media (texting and instant messaging), sitting in the classroom and sitting during transport (Gorely, Marshall, Biddle, & Cameron, 2007; Leatherdale, 2010). A sedentary lifestyle is distinct from a physically inactive lifestyle as being sedentary is not just an absence of moderate to vigorous physical activity (Pate, O'Neill, & Lobelo, 2008).

BACKGROUND:

The physiological effects of sedentary time on health variables remain relatively unclear particularly when physical activity is also considered (Patel et al., 2010). Before relationships between sedentary levels and health can be established, a method for describing sedentary levels and patterns needs to be explored. Like the measurement of physical activity previously, the measurement of sedentary behaviours has relied on self-report questionnaire and diaries. These do not capture the full spectrum of sedentary activities. Researchers have emphasised the importance of objectively measuring these sedentary levels and behaviours, as technology exists that allows for the direct measurement of body position (Bassett, Freedson, & Kozey, 2010; Matthews et al., 2008; Owen, Healy, Matthews, & Dunstan., 2010).

One such technology is the ActivPAL physical activity monitor (PAL Technologies Ltd, Glasgow, UK) which incorporates a micro-electrical mechanical system (MEMS) microprocessor and allows for the direct examination of sedentary time. Recorded epochs are classified into periods of sitting/lying, standing and stepping, allowing both sedentary behaviours and physical activity to be estimated. Matthews et al. (2008) and Bassett et al. (2010) have suggested the use of the ActivPAL for measuring sedentary levels as it gives a direct estimate of body position (i.e. it does not rely on thresholds or cut-points) and allows time spent standing to be estimated independently.

In adults, there is an increasing interest in the relationship between total time spent sitting and health outcomes (Bassett et al., 2010; Hamilton, Hamilton, & Zderic, 2007; Healy, Winjndaele, et al., 2008; Owen et al., 2010; Patel et al., 2010) but less research

has been conducted in adolescents. Sedentary time in adolescents can affect health in a number of ways: impacting current health status, future health status or carrying the negative behaviour into adulthood which in turn would also affect future health status. However, the total amount of time adolescent females spend sedentary across the week is unknown.

PURPOSE/RESEARCH QUESTIONS:

The objective of this article is to report the sedentary levels and patterns of a group of adolescent females using the ActivPAL. Furthermore, this article will examine whether sedentary patterns and physical activity levels differ between weekday and weekend day.

METHODOLOGY:

Setting
This research took place in Limerick city and county in the mid-west of Ireland. Approval for the research studies were obtained from the University of Limerick research ethics committee. Participants were randomly selected from 14 second level schools in both urban and rural areas in Limerick. Participants were eligible if they were between 15 and 18 years of age and had no illness or injury that may prevent them from participating in physical activity. Only those who provided full written parental and written participant consent could participate in the study.

Protocol
Testing took place in participant's schools. Each participant reported to the test area in light t-shirt and shorts. Height and weight were measured twice following standard procedures without shoes and body mass index was calculated. Waist circumference was measured twice at the narrowest part of the participant's trunk with an anthropometric tape. Each participant was then provided with an accelerometer and given full verbal and written demonstration of its use. Participants were asked to wear the accelerometer for 24 hours per day over a 7 day period. The device was only to be removed for bathing, swimming or for other water based activities. The accelerometers were retrieved from participants on the 8th day at their schools.

Accelerometer
The ActivPAL is a single unit, uni-axial accelerometer measuring 53 x 35 x 7 mm and weighing 20 grams. The device measures bodily accelerations and identifies episodes of sitting/lying, standing and stepping. It is worn on the midpoint of the anterior aspect of the right thigh and is attached to the skin directly using a PAL*stickie*; a hydro-gel adhesive pad. The device has two main outputs for use when investigating free-living activity in this context: inclination of the body and accelerometry counts. These accelerometer counts, similar to output from other accelerometers, are an arbitrary value summed for every 15 second epoch and can be used to estimate physical activity intensity and metabolic equivalents (METs). The ActivPAL has been validated for the determination of static, dynamic and postural activity in adults (Grant, Ryan, Tigbe, & Granat, 2006; Hart, McClain, & Tudor-Locke, in press). The device has been found to have excellent inter-device reliability (ICC 0.99) and cadence measurement when walking under laboratory (treadmill) and outdoor

conditions (Harrington, Welk, & Donnelly, 2011; Ryan, Grant, Tigbe, & Granat, 2006).

Data Reduction

According to prescribed accelerometer testing protocol participants were required to provide at least 4 days of valid data (including one weekend day) from the 7 day monitoring for their data to be included in free-living analysis (Trost, McIver, & Pate, 2005). A valid day was considered to be 600 minutes or more of recording during waking hours. Time spent sitting/lying (sedentary) was taken directly from the ActivPAL output. To calculate time spent in MVPA, the ActivPAL summary file was used. The threshold for MVPA was set at 3194 ActivPAL counts per 15 seconds. The equation of *MET=1.278+0.000539*counts* (significant relationship; r^2=0.65; p<.001) was developed using a mixed model approach where ActivPAL counts were used to estimate METs (unpublished data). Solving this equation for 3 METs (moderate intensity) resulted in a value of 3194 counts per 15 seconds. This threshold was applied to the ActivPAL output and each 15 second epoch which exceeded 3194 counts was simply totalled for each 24 hour day. Light physical activity was calculated by subtracting the time spent in MVPA from the total time spent stepping which is also found in the daily summary file.

Total sedentary time is a measure of the volume of sedentary activity but not the manner in which this sedentary time is accumulated. More detailed information on sedentary patterns was obtained by processing the ActivPAL data files using a customised Matlab (version 7.0.1, Mathworks Inc, Natick, MA, USA) computer programme. The programme examined each epoch which contains a full 15 seconds of sitting/lying, and classified this as a sedentary bout. This sedentary bout was only deemed to stop when it was interrupted by standing or stepping. Both the number of sedentary bouts and mean lengths of sedentary bouts were then calculated.

FINDINGS:

Ninety two adolescent females were originally approached for this testing session with 56 participants completing all of the testing. Reasons for not participating were absent from school (either before or after consenting; n=21), did not provide consent (n=7), consented but decided to withdraw (n=6) and sporting commitment (n=2). 7 day free-living data was collected from a representative sample of Limerick adolescent females (n=56) using the ActivPAL™ accelerometer. Participant characteristics are tabulated in Table 1. Of the 56 participants who completed all the testing, 6 participant data sets had to be excluded as they did not contribute 5 days or more plus at least one weekend day of accelerometry data.

Table 1: Participant characteristics (n=50)

	Mean	±SD	Range
Age	15y 11mo	11mo	15y 1mo-17 9mo
BMI (kg.m²)	21.7	3.1	15.9-30
Waist Circumference (cm)	71.3	7.1	59.5-97

Participants spent the majority of the waking day sedentary (9.0 hours). During waking hours, participants spent 9.7 (±2.2) and 8.0 (±2.5) hours sedentary, 4.0 (±1.4) and 4.6 (±1.9) hours in light PA and 0.9 (±0.5) and 0.8 (±0.7) hours engaged in MVPA. These values are expressed as percentages of the waking day and are displayed in Figure 1. Significant differences were identified in the amount of sedentary and light activity that was accumulated on weekdays compared to weekend days ($p < .001$) with participants spending less time sedentary on weekend days. However, once time spent sedentary is expressed in terms of total sedentary time over a 24 hour period (including lying at night) no significant differences are found between weekday (19.2 ±1.4 hours) and weekend day (18.7 ±2.1; $p = .66$). The mean number and duration of sedentary bouts are tabulated in Table 2. Participants accumulated significantly more sedentary bouts ($p < .05$) of longer duration ($p < .001$) on weekdays compared to weekend days.

The mean duration of sedentary bouts masks the fact that some sedentary bouts are extremely short, while others are much longer. Aggregated sedentary block data were split into separate days for each participant and data were then allocated into blocks of various durations. These blocks ranged from less than one minute to greater than 41 minutes (Figure 1). There were significantly less sedentary bouts of 21 to 40 minutes in duration on weekend days (5.1 ± 1.7; mean ± SD) compared to weekdays (7.1 ± 1.8; $p < .01$). There were no other significant differences between weekdays and weekend day.

Table 2: Mean (±SD) number of sedentary bouts and mean duration of sedentary bouts between weekdays and weekend days.

	Weekday	Weekend day	*p*
Sedentary Bouts (number)	48 (3.6)	45 (3.4)	.042*
Duration of Sedentary Bouts (minutes)	10.2 (2.7)	8.6 (2.6)	<.001**

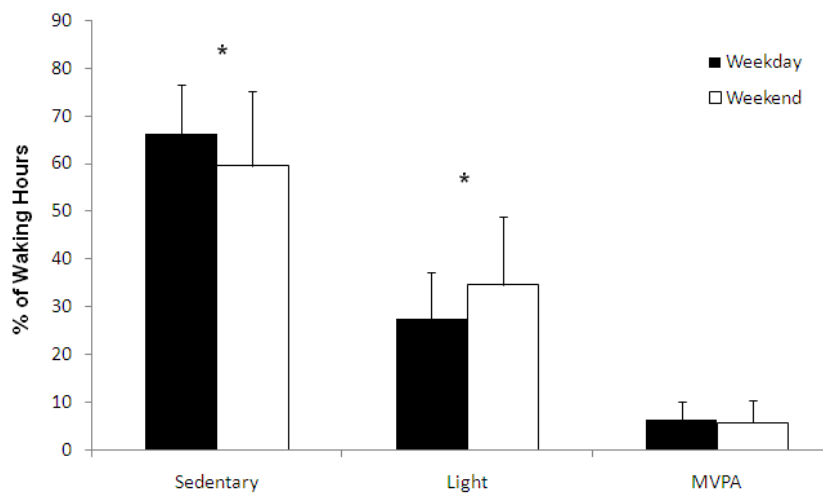** Significant difference $p < .001$; * Significant difference $p < .05$

Figure 1: Percentage of waking hours spent sedentary, light and moderate-to-vigorous physical activity (±SD). * Significant difference between weekday and weekend day ($p < .001$)
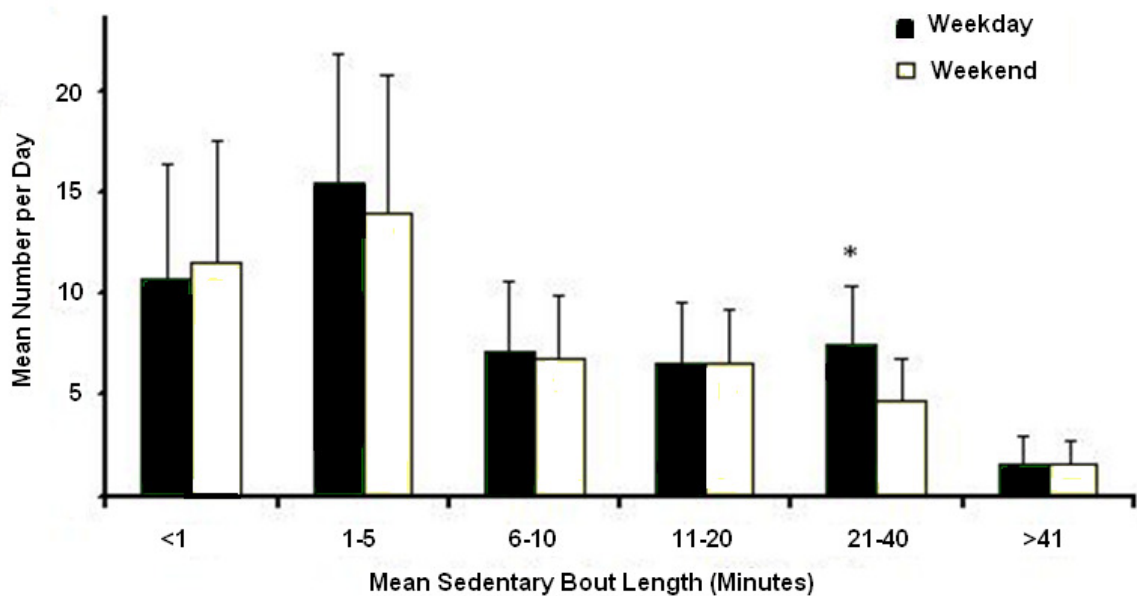
Figure 2: Number of sedentary bouts per day (±SD) of various sedentary bouts duration (x-axis) compared between weekdays to weekend days. * Significant difference between weekdays and weekend days (p<.01).

DISCUSSION:

Given the increasing evidence of the adverse effects of sedentary behaviours in adulthood (Dunstan et al., 2007; Healy et al., 2007; Healy, Winjndaele, et al., 2008; Katzmarzyk, Church, Craig, & Bouchard, 2009), accurate and valid measures of the full range of sedentary behaviours are beneficial (Clark et al., 2009). Little is known about the total time adolescents spend sedentary time across the week. This paper has reported on the magnitude of the sedentary levels of a group of Irish adolescent females and the differences between weekdays and weekend days.

Analyses from representative samples of the population in the United States have highlighted older adolescents, specifically females, to be a particularly sedentary group (Matthews et al., 2008; Sisson et al., 2009). The results of the present research are consistent with these findings. Similarly, results reported in other objective examinations of sedentary behaviour in adolescent populations found that the majority of the waking day and the full 24 hour day were spent sedentary (Jago, Anderson, Baranowski, & Watson, 2005; Sirard, Kubik, Fulkerson, & Arcan, 2008; Treuth et al., 2007; Treuth, Hou, Young, & Maynard, 2005). These sedentary levels may track into adulthood (Biddle, Pearson, Ross, & Braithwaite, 2010) which in turn can increase the risk of coronary heart disease and other co-morbidities (Katzmarzyk et al., 2009). Thus far, weak to moderate relationships between sedentary behaviours and health parameters have been established in adolescents (Ekelund et al., 2006; Hancox, Milne, & Poulton, 2004; Marshall et al., 2004; Robinson et al., 1993; Sisson et al., 2010). These studies have predominantly focused on TV viewing and computer use rather than total sedentary time so the accuracy of the results identified in these studies are uncertain. Since accelerometry has overtaken self-report as a widely used measure of free living physical activity, any such relationships in adolescents, including the

possible independence of this relationship from physical activity, must be established using objectively measured total sedentary time and without the use of cut-points where possible.

A number of challenges exist in the measurement of sedentary time and levels. Unlike physical activity, it is more difficult to self-report all time spent sedentary as it is so ubiquitous and hard to quantify. Furthermore, changes in pastimes mean that TV viewing is just one of a variety of sedentary behaviours that young people can engage in (Gorely et al., 2007). It is also suggested with the advent of 'active' video gaming such as the Nintendo *Wii*, automatically classifying all computer gaming in the sedentary category is now not appropriate (Sisson et al., 2009) as these video games increase energy expenditure particularly due to upper body movements. The measurement of sedentary behaviour is also hampered by its definition. Sedentary behaviour has been classically defined as any activity less than 1.5 times above resting metabolic rate; 1.5 METs. This definition includes activities like lying, sitting, television viewing, sitting listening to music, reclining and meditating (Ainsworth et al., 2000). Standing has a metabolic equivalent value of <1.5 METs so would be considered a sedentary behaviour under this criterion. However, researchers have begun to class standing separate to sitting when defining sedentary time (Owen et al., 2010). Through the use of an inclinometer function, accelerometers now have the ability to directly measure the position of the lower body, whereby standing (often considered sedentary) can be treated as a separate activity (classified as a light activity). This can be done without the use of cut-points. Free-living studies have used a practical cut-point of <100 counts per minute to define sedentary behaviour using the Actigraph accelerometer (Healy et al., 2007; Healy, Dunstan, et al., 2008; Sirard et al., 2008; Treuth et al., 2007; Treuth et al., 2004) which itself can affect validity (Hart et al., 2011) .

Due to the high levels of sedentary pastimes (Gorely et al., 2007), one would assume adolescents to be more sedentary in their own leisure time (at evenings and on weekends) than they would be at school. Unexpectedly, participants spent more time sedentary on weekdays than on weekends, similar to a previous results on adolescent females (Treuth et al., 2007). Our data indicates that these adolescent females were sedentary for longer and in longer continuous blocks on weekdays than weekend days. Time spent sedentary differed between weekday and weekend day but this was not compensated by increased physical activity on weekdays. When the extra time these adolescents spent in bed or having a lie in on weekends is taken into account, there was no difference in the total amount of time spent sedentary over the full 24 hour day. However, the difference in bout duration still remains. This difference possibly reflects the time that second level students spend in uninterrupted sitting during school classes. Unwittingly, the school setting appears to promote sedentary levels and patterns which have the potential deleterious effects on health in the long-term. The duration of each class in the schools studies ranged between 25 and 40 minutes so students sit, uninterrupted, for these lengths of time over many classes each day. School-based interventions which have the primary goal of decreasing sitting time have yet to be reported in the literature.

Transitional and light physical activity contributes to overall energy balance and thus cannot be overlooked (Levine, Eberhardt, & Jensen, 1999). Youth physical activity data from NHANES has recently been reported by Mark & Janssen (2011). Females

aged between 8 and 17 (mean 12.8 years) engaged in 22.7 minutes (median) in low intensity physical activity, defined as 2000 to 3000 counts/minute approximating to 3 to 3.8 METs. The authors defined incidental movement as the number of counts which are less than 2000 counts/minute (<1.5METs) and considered this as a separate construct to time spent in low intensity physical activity. In our current analysis these together are considered light physical activity. It is unclear whether this light activity can affect adiposity in the same way it does in adults (Mark & Janssen, 2011). However, since light activity has been negatively correlated with sedentary (behaviours/patterns) (Healy et al., 2007) it can at least be said that this light activity is beneficial as it replaces sedentary behaviours.

While we have taken a unique approach to investigating the lifestyle of a sample of Limerick adolescent females the limitations of this study need to be acknowledged. While this sample was a random and cross-sectional, the sample size is small so results should be interpreted with caution. The results are also descriptive in nature and may not be extended to other populations or age groups at this early stage. However, these results do give a more detailed insight into the sedentary levels patterns of adolescent females than was previously known. We have demonstrated the type of rich, detailed information that can be garnered from an objective measurement device such as the ActivPAL. Data such as this, combined with robust physiological and health measures, could begin to close the gaps in knowledge of the relationships between sedentary behaviours and health in young people.

IMPLICATIONS AND RECOMMENDATIONS:

The school setting unwittingly promotes high sedentary levels. However, until robust evidence relating sedentary levels to disease outcomes independent of physical activity, adolescents should continue to be encouraged to accumulate 60 minutes of MVPA.

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INCREASING THE PARTICIPATION OF 'GIRLS N GOLF'

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INTRODUCTION:

This paper reviews the participation of females, and particularly girls (aged eighteen and under) in golf in Ireland. Low engagement of young females in golf instigated the Girls N Golf initiative, which is run by the grassroots golf development organisation Junior Golf Ireland. The aim of the programme is to create awareness among girls about golf, to introduce girls to golf and to encourage girls to take up golf club membership. The ensuing piece reviews the Girls N Golf programme since its initiation in 2007, the progress made and challenges encountered.

BACKGROUND:

Females in Golf
Research has shown that golf clubs are unequal and exclusionary institutions, where rules, policies and practices marginalise minority participants. The history of golf details participants as royals, nobles and "gentlemen golfers", while women were restricted to secret games involving little more than putting (Concannon, 1995). Historically females have struggled to gain a presence in golf clubs, where some clubs refuse to admit female members, e.g. Augusta National, USA and Muirfield, Scotland (Haig-Muir, 1998; Nylund, 2003; Scarboro & Husain, 2006; Senyard, 1998; Song, 2007). Gender discrimination is an ever-present characteristic of the golf club setting and research with both female professional and beginner golfers has shown that inequality is not confined by ability level (Crosset, 1995; McGinnis & Gentry, 2006; Shotton, Armour, & Potrac, 1998). Some claim the social construction of golf is normatively male, where widespread gender marking and the socialisation of young males into golf from a young age, support the maintenance and legitimation of existing patriarchal practices and hierarchies (Haig-Mui,r 2004). As a result, female participants face tremendous barriers in the entry into traditionally male sports such as golf.

In terms of golf club membership in Ireland, gender equality has received much attention. Throughout the twentieth century, associate membership was a common amongst female golfers in mixed gender golf clubs in the Republic of Ireland. In 2000 the Equal Status Act was instituted, which denied private member clubs from instating gender specific terms and conditions on membership categories. Single gender golf clubs were not challenged until 2004, when the Equality Authority won a District Court case against Portmarnock Golf Club, a male only golf club. Following an appeal the case reached the Supreme Court, where the legal right for the golf club to restrict its membership to males was upheld (Coulter, 2009; Song, 2007). In line with a small provision in the Equal Status Act, Portmarnock Golf Club had changed its constitution to cater for the needs of a specific gender, i.e. males, rather than the needs

of golfers. Equality legislation protecting the members of private clubs in England, Scotland and Wales was enforced in 2010, but no such provision has yet been made for Northern Ireland.

Girls and Sport in Ireland
Irish research has evidenced disparities in the relationship between social class, gender and sports participation, and early age socialisation is a definite precursor to later inequalities in sport. Evidence shows that more boys than girls play sport in Ireland, a greater variety of activities are offered to boys and resources are not evenly allocated between boys and girls (Connor, 2003; De Roiste & Dineen, 2005; Woods et al. 2007; Woods et al. 2010). Reduced sporting opportunity for the disadvantaged and lower social classes begins in school, where the sporting needs of the higher social classes are more likely to be fulfilled (Connor, 2003; Lunn, 2007). Socialising agents such as family, peers, school and youth sport settings are crucial in the communication of dominant ideologies. Connor (2003) contends that girls are not socialised into certain sports as much as males. Lunn & Layte (2008) suggest that Irish females are not actually less interested in sport; rather, the different treatment of girls from a young age by socialising agents opens up a gender gap in sports participation which never closes. There is also much evidence of a high drop out rate of girls in team pursuits, particularly in secondary school, where they greatly value individual activities such as dance (De Roiste & Dineen, 2005; Lunn & Layte 2008; Woods et al. 2010). As a highly social individual activity, golf is well positioned to attract high participation from girls.

Junior Golf in Ireland
Since its formal initiation in the late 1800s, golf in Ireland has been characterised by gender separated governing bodies, the Golfing Union of Ireland (GUI) and the Irish Ladies Golf Union (ILGU). An account of the history of the GUI describes how by the mid-1900s the organisation began to recognise the need to grow the game, and thus encouraged clubs to introduce and enlarge junior boys' membership (Menton, 1991). This era in junior golf was focused on providing championships and coaching for high performing boy players, rather than encouraging a wider and younger playing audience. The 'Charter for Junior Golf' records that the number of junior members in Irish golf clubs increased by 48% between the years 1987 to 2000 (GUI et al. 2000). Following publication of the Charter, the ILGU, GUI and Professional Golfer's Association (PGA) began to realise the extent of what needed to be done to promote golf for children and they agreed to invest in a separate junior golf body to be named Junior Golf Ireland (JGI). JGI oversees the development of grassroots golf in Ireland, working primarily to introduce boys and girls to golf and to encourage pathways for children to become regular golfers (GUI et al. 2000).

The international achievements of the teenage twins, Lisa and Leona Maguire, have heralded much attention to girls' golf in Ireland. Given the twins' profile and the inaugural arrival of the Solheim Cup (female equivalent of Ryder Cup) to Ireland in 2011, high performance golf has become a prime focus in female golf. In spite of the subsequent increased awareness, the playing population of female golfers has fallen by 8% since 2008, owed primarily to the economic recession, while females make up just over one fifth of overall golf club members (ILGU 2011; Lunn & Layte, 2009). ILGU programmes such as 'Women in Golf' have attempted to stem the decline in ladies membership. Akin to their adult counterparts the number of girls playing the

game has always been much lower than that of boys, where girls make up less than 2% of overall golf club members in Ireland and since 2008 the number of junior girl members has dropped by 9% (ILGU 2011). In recognition of the low participation of girls in the sport, in 2007 JGI set up a programme that aimed to encourage more girls to take up golf.

'GIRLS N GOLF':

Girls N Golf was developed with support from the Irish Sports Council's Women in Sport (WIS) initiative. WIS aims to promote increased participation by females of all ages in sport, as players, officials, and coaches, and has granted over €100,000 to JGI since 2007 to run Girls N Golf. When originally established by JGI, Girls N Golf was a taster golf programme, the goal of which was to provide a novel and alternative physical activity outlet for teenage girls. However, given the decline in golf club membership Girls N Golf has become a more targeted programme, the primary aim of which is to increase the number of girls becoming golf club members. Since 2007 almost 2000 girls have participated in Girls N Golf, and funding changes have caused participation numbers to fluctuate annually, while a participant charge was introduced in 2010 (see Table 1). Feedback from the key stakeholders have initiated programme revisions, including a decrease of the target group age from 15-17 to 10-14, and a change in session times from during physical education class to outside of school time (see Table 1). In the initial years Girls N Golf was active only in the Republic of Ireland until 2010, when it was introduced to schools and golf clubs in Northern Ireland.

Table 1: Primary outcomes of Girls N Golf since 2007

	# of schools/ golf clubs	Target group	Lesson time	# of girl participants	# of adults involved	# of girl members
Year 1: 2008	15 schools/ 14 golf clubs	Transition year girls (Rep. of Ireland)	5 week programme during PE class	258	68	50
Year 2: 2009	31 schools/ 32 golf clubs	Transition year girls	6-8 week programme directly after school	600	159	150
Year 3: 2010	33 schools/ 30 golf clubs	1st & 2nd year (Rep. of Ireland), Year 8/9 girls (N. Ireland)	10 week programme directly after school	534 (charge introduced of €25/£25)	164	124
Year 4: 2011	21 schools/golf clubs + further support for 25 golf clubs	5th & 6th class, 1st & 2nd year (Rep. of Ireland), Year 8/9 girls (N. Ireland)	10 week programme after school/ weekends	400 (charge of €20/£20)	150	

Following participant recruitment at a JGI Awareness Day in a local primary or secondary school, up to twenty girls from the locality partake in a ten-week introduction to golf programme at the linked golf club. The programme is designed by

JGI and implemented on the ground by golf club volunteers and a PGA coach, and content includes basic tuition on a variety of golf skills such as putting, chipping and driving. Most sessions take place at the golf club, but groups can also avail of other local golf facilities such as a driving range, and pitch and putt or par three courses. A celebratory gala day marks the end of the programme. Junior Golf Ireland liaises with clubs to alleviate the cost of the girls' future golf participation, through equipment donations, reduced membership schemes and the *'Darren Clarke Scholarship'*, which entitles recipients to a 50% reduction in their club membership fee. Photos and case studies are available on the JGI website www.juniorgolfireland.com.

EVALUATION:

Every year a Girls N Golf evaluation is carried out to assess the participants' experiences of the programme and to gain feedback and suggestions from the adults involved, i.e. schoolteachers, golf club volunteers, PGA coaches and JGI regional development officers. Since 2008 over 2500 surveys have been distributed to the key stakeholders, whose suggestions have resulted in programme alterations (see Table 1). Tables 2-4 illustrate a sample of the participants' and adults' survey responses since 2008.

Challenges
The majority of golf clubs in Ireland are owned by members or by private proprietors. Of the union-affiliated 430 (approximate) golf clubs, only five of these are public courses, where golf club membership is more accessible and the facility has a closer tie with the local community, e.g. Rathbane Golf Club, Limerick. Private members' clubs implement policy and practice at the behest of their own members, and may be less willing to support outside projects such as Girls N Golf. Membership waiting lists have become popular in some areas and according to the National Junior Golf Survey, 67% of golf clubs have a limit on the number of junior members enrolled, while 16% of clubs have no vacancies for junior members (Kitching, 2008). Even though interest in golf may be potentially higher, JGI rarely implements Girls N Golf in private golf clubs in highly populated areas, because of their lack of opportunity to recruit new young people to golf in these clubs.

Due to funding limitations in year three a participant fee was introduced, which was subsequently decreased in year four. Although there were few concerns about the fee from the stakeholders, given the economic climate it is likely to discourage the participation of some, as cost has proved to be an inhibiting factor in sports participation (Lunn & Layte, 2009). Some golf club volunteers have actually encouraged the introduction of a cost and the elimination of bus transfers from the school to the club, where participants and their parents invest in Girls N Golf and take more ownership in the sessions and in golf club integration and membership. However, although the Darren Clarke Scholarships and the equipment 'bin' initiative have attempted to alleviate the burden of costs associated with continued golf participation, follow up costs for junior golfers remain high (Goodwin & Taylor, 2004).

Table 2: Girl Participants' Experiences of Girls N Golf

Statement (most popular answer)	2008	2009	2010
I enjoyed this programme (strongly agree)	75%	64%	67%
I learned from this programme (strongly agree)	72%	60%	73%
I will play golf regularly after this programme (not sure)	30%	35%	38%

Table 3: Girl Participants' Favourite Aspects of Girls N Golf

Rank	2009	2010
1	Learning how to play golf/trying something new	Spending time with friends
2	Gala Day	Gala Day
3	Playing on the golf course	Learning how to play golf
4	Driving range/hitting the golf ball	Learning a new skill
5	Making new friends	Playing on the golf course

Table 4: Selected Adult Stakeholder Comments

	School teachers	Golf Club Volunteers	PGA Coaches
2008	"The teaching methods used by the pro in our case were too boring and did not stimulate the girls. There was no progression in the teaching."	"15-17 years is too late to take up golf because from 17 years on their focus is on their academics and third level study. The project should be ran with 12-14 year olds who have less academic commitments."	"I did not spend too long on technique/tuition at any stage; instead I would teach, let them apply the information and then rotate this system a few times."
2009	"Some girls who would not have seen themselves as being particularly sporty really excelled and found something they could be good at."	"Great way to introduce girls to golf without incurring the expense of joining a club or purchasing golf clubs. 1st years or maybe 2nd years are the best age to get them involved. Overall the 'Girls N Golf' programme is excellent."	"Team games were the girls' favourite aspects of the programme."
2010	"The golf clubs were totally inflexible when it came to providing the girls with a reduced membership fee." "Running the programme should not be dependent on membership uptake – most of the girls are not ready for full membership. It is a taster programme and is valuable as a stepping stone into other opportunities. Membership is something for later."	"I felt that some girls were very interested. But others really didn't have any interest. We lost potential membership because the girls' parents didn't play. The pro and coordinator and school representative were excellent and couldn't have encouraged them more. I think that if parents were more involved they might be more encouraging."	"As usual the problem is going to arise when girls get handicaps and try to play in competitions. I don't think they will be so welcome then. These are the real problems we have getting girls into golf." "Girls N Golf was very enjoyable and changed my views on teaching skills to complete beginners!"

Tables 2-4 demonstrate the key stakeholders' interest and investment in Girls N Golf. In spite of the positive feedback the programme has not satisfied its aims, as the percentage of girls who took golf club membership has gradually decreased each year at 33% in 2008 to 23% in 2010. As pointed out by the volunteer in Table 4, girls who may have no family members playing golf may not inherit sufficient cultural and social capital from their family and social networks to endure in the setting. In an examination of the embodied capital of cadet golfers, Zevenbergen, Edwards, & Skinner (2002) found that young golfers had to assimilate and attempt to learn the cultural system of golf or else face marginalisation. Results from the 2008 National Junior Golf Survey outline a controlled, restrictive and adult-oriented golf club environment for junior members, while current research by the author has evidenced the endorsement of specific junior member behaviour by adult members, and the attention given to talented and male junior members, both of which are not easily negotiated by girls who are new to the setting (Kitching, 2008). One club, which ran Girls N Golf and had recruited twenty participants as golf club members, reported that two girls who shared a set of golf clubs were asked to leave the course. An older male member approached and told them it was forbidden to share clubs on the course. Neither girl returned to the golf club following this incident.

FUTURE FOR GIRLS N GOLF:

Children derived from higher social classes in Ireland are more likely to participate in sport, while in terms of recruitment, sports clubs are vying for the attention of four to nine year olds, where 93% of primary school aged sports club members are recruited by the age of nine (Lunn, 2007; Woods et al. 2010). Since its initiation in 2007, Girls N Golf has grown from a taster golf programme for girls to a targeted programme to attract new members to golf clubs. Participant recruitment has been changed to accommodate clubs that struggle to attract girl members, where recruitment age has decreased, and many of the target schools are single sex, where, in the past, all girls' schools have provided the largest number of club members from the programme. Rather than attracting a narrow homogeneous population of young, middle class girls to golf club membership, through sampling and awareness the future for Girls N Golf should be in providing girls of all ages, ethnicities, (dis)abilities and social classes an opportunity to try golf. To conclude, below is a comment from Sarah in Mallow, a participant in Girls N Golf 2010:

> *My favourite thing about golf is that it is so flexible. You can play it individually or with friends, competitively or just for fun, wherever and whenever you want and the only expectations of you are your own. I was introduced to a new sport that I could play with my friends, at my own pace and a sport that I actually really enjoy and will definitely keep on in the future.*

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VISION INTO ACTION: PRE-SERVICE TEACHERS AND PHYSICAL EDUCATION

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INTRODUCTION:

The vision or personal view of Physical Education (PE) held by teachers appears to be influenced by a myriad of factors. Past personal experiences in PE (Morgan & Bourke, 2008) and a lack of teacher preparation (Morgan & Bourke, 2005) are known to impact on teachers' beliefs and subsequent actions in PE. This paper represents part of a larger study that sought to investigate pre-service teachers' backgrounds and perspectives of PE in primary schools. The focus of the paper is on pre-service teachers' self-perceived competencies, strengths and weaknesses related to their teaching of PE and the key messages they believed were central in teaching PE at primary level. By exploring these aspects, a description of pre-service teachers' vision for PE may be identified and the researchers, both of whom taught PE to the sample cohort in two Colleges of Education (primary) in Dublin, were afforded the opportunity to reflect on the manner in which their courses may have impacted on this vision of pre-service teachers in PE.

BACKGROUND:

Initial Teacher Education (ITE) in Ireland offers the option for a student who holds a general degree to undertake a postgraduate course (eighteen months, full-time) to qualify as a primary school teacher. As part of this ITE, postgraduate pre-service teachers complete a 24-30 hour PE module. Within this module they engage in seminars and workshops with an emphasis on practical work, underpinned by the philosophy and theory of the Primary Physical Education Curriculum (Government of Ireland, 1999a). The Primary PE Curriculum is informed by key considerations: the importance of enjoyment and play; maximum participation by all children; the development of skills and understanding; a balance between competitive and non-competitive activities; a balance between contact and non-contact activities; providing opportunities for achievement for each child and providing activities equally suitable for girls and boys (Government of Ireland, 1999b, p. 3). Lectures focus on these key considerations, current issues in primary PE and the planning and assessment required for implementing programmes of PE as part of their teaching practice (TP) and beyond. These pre-service teachers also complete three periods of TP during which they are required to teach PE. This study focused on a sample of graduates (n=233) who had undertaken this postgraduate course in 2008-2009.

Research indicates that ITE courses play an important role in shaping teachers' beliefs related to PE (O'Sullivan, 2005; Tsangaridou, 2008). The content and nature of pre-service teachers' experiences related to teaching and learning in PE has been found to

be strongly correlated to the learning culture and interpretation of curriculum experienced within college courses and during teaching practice (Herold & Waring, 2011). A lack of teacher preparation as part of ITE has been identified as the greatest barrier to the teaching of quality PE (Morgan & Bourke, 2005).

Teacher socialisation theory is central to this study as there are many factors which can influence teachers' beliefs and consequently their vision for PE as they enter into the teaching profession (Curtner-Smith et al., 2008; Lawson, 1986; Stroot & Whipple, 2003). Lawson (1986) outlines three distinct types of socialisation: accultural, professional and organisational. Professional socialisation is most relevant to this study and provided a context within which relevant research questions could be framed. Professional socialisation refers to the influence of ITE on pre-service teachers via PE methods courses and TP placements. Curtner-Smith et al. (2008) highlight that at second level, physical education teacher education courses are generally the weakest form of socialisation experienced by PE teachers. Garrett & Wrench (2008) argue that TP placements, if preceded by a critical analysis of personal experiences in PE and pedagogical input from methods courses, are particularly meaningful in coming to terms with the complexity of teaching PE at primary level. This study sought to explore the impact such aspects of professional socialisation have on pre-service teachers' future vision in relation to the teaching of PE.

PURPOSE:

The following research questions were addressed in the study:
(a) How competent do pre-service primary teachers feel in relation to the teaching of PE informed by the Primary PE Curriculum? (Government of Ireland, 1999a)
(b) What are their self-perceived strengths and difficulties related to their teaching of PE?
(c) What are the key messages they identify as they complete their ITE in PE?
(d) What do they envisage as their key foci as they begin teaching in schools?

METHODOLOGY:

A mixed methods approach was deemed most appropriate by the researchers. A purposive sample (n=233, representing an 83% response rate) of recent graduates of the postgraduate diploma in primary teaching from two colleges of education in Dublin was the focus of the study. Reflecting the gender balance within primary teaching 82% of the group were female (DES, 2005). The mixed methods approach facilitated collection of baseline data and preliminary exploration of some issues related to teacher socialisation by gathering data using a questionnaire followed by semi-structured interviews. The design of the questionnaire was guided by Lawson's (1986) teacher socialisation theory and was divided into sections reflecting student teachers' accultural and professional socialisation. This paper focuses on the latter aspect of socialisation which is reflected in the last section of the questionnaire. This section examined (a) pre-service teachers' self-perceived competencies, strengths and weaknesses related to their teaching of PE, (b) the key messages that pre-service teachers identified following their PE methods course, and (c) their future intentions to teach PE. A combination of closed and open-ended questions was used. The sample represented all of the students who participated in the final seminar of the PE module within each of the colleges. They completed the questionnaire during part of this

seminar. A research assistant, a person unknown to the students, explained the project to them and administered the questionnaire. This was in an effort to limit the effect of bias as the two researchers taught the students within the sample. The students filled out the questionnaires anonymously and indicated on the consent form if they wished to take part in further interviews.

Semi-structured interviews with a focus group (n=8) and with an individual facilitated probing of some of the responses provided within the questionnaires. As the study was conducted at the end of the college term it proved difficult to form a second focus group but it was nevertheless deemed useful to gather the perspective of a student who agreed to be interviewed. Those who agreed to be interviewed were grouped by the research assistant according to the following criteria: gender and self-perceived 'sportiness'. The research assistant then selected a random sample of these students and invited them to be interviewed within each of the colleges to ensure that there was a mixed representation of these groupings. To further protect the anonymity of the respondents and enhance the objectivity of the study, each of the researchers interviewed in the college setting that was not known to them.

The quantitative data were analysed using SPSS (15.0). Open-ended responses within the questionnaire were analysed using SPSS Text Analysis for Surveys (2.0). The interviews were analysed using the constant comparative method and relevant themes were identified through a coding process (Flick, 2009). Results from the questionnaire and interview data were then aligned with the research questions to support construction of the argument. This also allowed for triangulation of emergent themes.

FINDINGS AND DISCUSSION:

Findings from this study provide valuable insights into pre-service teachers' perspectives regarding the teaching of PE following their ITE. The findings will be discussed under the following headings relating to the research questions outlined above:
(1) pre-service teachers' knowledge and competency levels related to teaching PE informed by the Primary Physical Education Curriculum,
(2) pre-service teachers' self-perceived strengths and difficulties regarding their teaching of PE,
(3) the key messages pre-service teachers identified related to the teaching of PE as a result of their PE methods courses, and
(4) pre-service teachers' future vision related to the teaching of PE.

Knowledge and competency levels
The self-perceived competency levels of the sample of pre-service teachers related to teaching PE were investigated through the questionnaire and interviews. Findings indicate that respondents felt competent or very competent to organise PE lessons (92%), to cater well for both girls and boys (90%), to integrate PE with other subjects (78%) and to provide for maximum participation (76%). While competency levels regarding differentiation and assessment within PE lessons were less positive (65% and 64% respectively), it would appear that catering for children with special educational needs (SEN) represented a particular challenge. Forty nine per cent of respondents reported that they were only 'somewhat competent' while 12% believed they were incompetent in this area. Interview data support this finding:

'I'm not confident with special needs in PE at all…the last TP in particular there was a boy with a very rare syndrome... and I had no idea how to fix PE around to suit it' T2.

An earlier study (Murphy, 2007) reported that just 11% of practising teachers indicated that they had learned to adapt programmes of physical education to cater for children with SEN as part of the national in-service programme.

Self-perceived strengths and difficulties related to teaching PE

Strengths
The respondents were asked to identify what they felt their personal strengths were in relation to their teaching of PE. Some of the literature suggests that student teachers with strong self-perceptions of their fitness levels are more likely to teach PE (Faulkner & Reeves, 2000) and that physically active teachers provide higher quality PE lessons (McKenzie, LaMaster, Sallis, & Marshall, 1999). This research is corroborated to an extent in this study where 38% of respondents identified their own sports backgrounds as being a factor which would strengthen their teaching of PE. However, the results indicate that respondents believe that personal attributes play a much more significant role in the effective delivery of PE lessons at primary level. Fifty-six per cent of the respondents identified personal traits such as patience, empathy, a positive attitude, enthusiasm and willingness as central to enhancing PE lessons. Interview data supported this with one respondent commenting:

'if you get a good teacher who is really enthusiastic and not just about what they are interested in, but just giving the kids a sample of everything…I think that's it' T1.

While personal skill competence related to specific sports might be a constraint for some, others (23%) indicated that their own general teaching skills were something that could enhance their lessons. Interview data highlight that the PE methods courses may have been an influential factor here:

'I think the course itself in [institution named] has been very good in terms of you do feel equipped with the skills to teach all the strands in the curriculum' T9
'We were, like, playing the games, we were doing the athletics, we were doing everything, like I'd be confident with my teaching skills in any aspect of the curriculum now' T6.

Difficulties
Inhibiting factors or personal fears around the teaching of PE were also explored. Earlier research places a lack of confidence, competence and knowledge as central in terms of the barriers to quality PE lessons (Morgan & Hansen, 2008; Xiang, Lowy, & Mc Bride, 2002). ITE courses are generally designed to address such barriers. Internationally, generalist teachers in primary schools are reported as being often inadequately or inappropriately prepared to teach PE (Hardman & Marshall, 2000). Concurring to a certain extent with these findings, 21% of respondents in this study indicated that they lacked confidence regarding their subject knowledge and personal skill level in relation to some strands. Gymnastics in particular was referenced *'the one strand that I don't particularly feel confident or comfortable in teaching is gymnastics'* T1. However, they felt that was not due to a lack of knowledge since 86%

rated their knowledge levels as thorough or very thorough in the area. The impact of accultural socialisation appeared to be more relevant here:

'I'm still negative about aspects from primary school… I think that it's something I'm just always going to be anxious about and you know, that'll probably dictate how much I do in that strand when I'm teaching' T1

Fears relating to safety within PE lessons were found to be more prevalent inhibitors in this study with 27% of respondents reporting issues related to anxiety due to lack of effective classroom management and organisation. The focus group interview highlighted an interesting debate as to the nature of risk in PE lessons. While some participants felt that PE is:

'rough and tumble sometimes…no matter how many guidelines you set out or rules...there's always going to be one child who goes awkwardly and I think you just have to allow for that' T4, others were concerned about health and safety and their responsibility *'you might think they [the children] are all equipped to do the activities, but still at the end of the day it's your decision'* T1.

Providing safe PE classes was ranked as the second highest priority for these teachers when they were asked to identify what it takes to be a good teacher of PE.

Key messages from ITE PE course
The quality of PE methods courses experienced during pre-service teacher education has been found to be related to the quality of PE programmes in schools (Morgan & Bourke, 2005). While this study did not directly question the respondents as to the quality of the courses in both colleges, the interview data indicate that students were generally very positive regarding their ITE in PE and felt very well prepared to teach PE.

I really do feel quite ready now and I feel we have been very lucky in this college…you want to teach PE to the best of your ability' T9.

While Curtner et al. (2008) point to the relatively weak impact of methods courses on pre-service teachers' practices, Capel & Blair (2007) recognise that teacher socialisation in ITE is complex and cannot change things by itself. By investigating the key messages that pre-service teachers derive from their PE methods courses, this study offers some insight into the nature of professional socialisation as teachers graduate from the postgraduate diploma. While key messages such as the importance of (a) fun in the PE lesson, (b) safety, and (c) effective organisation featured strongly, two key messages emerged as significant. Twenty nine per cent of respondents felt that following their ITE they would focus on providing broad and balanced PE programmes to children, so as to avoid a games dominated experience for children:

'It's just to give all the kids, like, a broad sample…you just need a teacher that wants to do that rather than fixating on one sport…and just get the right kind of balance' T1.

The tension between sport and PE was also alluded to in the interviews in that the PE methods courses clarified their thinking in terms of providing variety:

'In our lectures I really kind of felt that I understood that if they [schools] have that real strong culture of sport, they just kind of turn that into PE as well and just do football for their PE and nothing else' T1.

Providing differentiated and inclusive PE lessons emerged as the second most prominent key message (28%) which respondents would 'carry' with them as they began teaching. Yet data analysed highlighted that these were areas where respondents felt least competent:

'I found in the last TP that I'm not confident with special needs in PE at all' T2.

It was encouraging for the researchers that these two key messages ranked highest for respondents, as a strong emphasis is placed on these during the postgraduate course. This is congruent with the research which points out that the manner in which the content of courses is organised reinforces the prioritisation of some knowledge over other (Capel & Blair, 2007).

Future vision related to the teaching of PE
In order to ascertain what respondents' future vision and intentions were in relation to their teaching of PE, they were asked to choose five statements that they considered most important to be a good teacher of PE. It is important to point out that a definition of a good teacher was not provided by the researchers. The concept was open to interpretation by the respondents and was possibly influenced by their personal view of teachers, their college course in general and their teaching practice experiences. The statements were chosen from a list of eleven statements which were informed by the colleges' course objectives, literature and the philosophy underpinning the curriculum. Reinforcing the emphasis on personality strengths and dispositions, 97% of these pre-service teachers felt that being enthusiastic about teaching PE was a most important for them. Interview data does highlight however, that pre-service teachers are aware that this enthusiasm may be challenged as experienced during TP:

'I had orienteering organised…and I was saying to one of the teachers if you'd like to try it... and she was saying 'oh, no, that's too much effort, I just throw a ball into the yard and they're grand' T6. This respondent later went on to say that *'there could be a danger that, if I was working there for a year or two, that I could fall into that attitude…I'd hope not to because I am enthusiastic at the moment, but I'd say it could be easy to fall into'* T6.

The effect of occupational socialisation is relevant here and gives an insight into the impact that even a short TP placement can have on pre-service teachers' visions for PE.

The second most emphasised statement (76%) related to good teaching in PE referred to the need for teachers to provide safe PE lessons while 75% believed that having a broad understanding of the PE curriculum was central. Seventy two per cent felt they would focus on providing enjoyment in their classes and 65% felt they would focus on modifying content to suit the weaker child/child with SEN. We, as initial teacher educators, were heartened by these emphases overall, given that we prioritise them during ITE. However, we were concerned that a focus on learning in and through PE

was ranked very low as an area of priority for these pre-service teachers. This suggests that they do not fully understand that PE can contribute to the learning of a child across physical, social, emotional and intellectual domains and indicates an area which needs to be addressed during our ITE courses.

IMPLICATIONS AND RECOMMENDATIONS:

The main findings suggest that pre-service teachers believe they are generally competent and knowledgeable regarding the teaching of primary PE. They have identified key messages that concur with those emphasised in their ITE physical education courses. The strengths and difficulties they identified provide clear signposts for ITE and continuing professional development in PE. These findings provide an insight into the vision of a sample of pre-service teachers related to physical education. Such a vision provides evidence of a positive disposition towards teaching the subject. Our challenge is to determine how this vision can be enacted in their teaching and sustained throughout their teaching careers. To achieve this we recommend that:
 (1) ITE providers continue to offer pre-service teachers opportunities to form a positive vision for PE by (a) engaging in seminars and workshops underpinned by the philosophy and theory of the PE Curriculum, (b) teaching physical education as part of their ITE, and (c) reading, reflecting on and debating the issues relevant to physical education for the young child so that their vision is founded on sound principles
 (2) ITE providers consider how they can emphasise important elements that emerged within the study as requiring attention i.e. the learning opportunities within PE and provision for children with SEN in PE
 (3) the outcomes of our study are shared with relevant bodies who will impact on teachers' vision and practice such as (a) the Primary School Inspectorate who have responsibility for overseeing the implementation of physical education in schools, and (b) CPD providers who support teachers as they implement the Physical Education Curriculum, and
 (4) some longitudinal studies be undertaken to ensure that we examine the socialisation that occurs at regular intervals during a teacher's career to determine how we can ensure that their vision for physical education remains positive.

In addressing these recommendations, the vision of pre-service teachers may be transformed into positive action as they understand their key role in ensuring that children are offered quality programmes of physical education.

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DO PHYSICAL EDUCATION LESSONS CONTRIBUTE TO CHILDREN'S PHYSICAL ACTIVITY LEVELS?

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INTRODUCTION:

Physical activity has been defined in numerous ways. According to Winsley & Armstrong it is however a "complex behaviour variable" which can vary "from day to day, in intensity, frequency and duration and consists of both unavoidable activity and variable activity" (p.65). Booth et al. (2001) suggested that any changes in this complex behaviour are dependent on different influences. Recently national (UK) TV advertisements and local campaigns have focused on encouraging individuals and groups to be more physically active to help benefit our health and wellbeing. There is a substantial body of evidence on the benefits to health for adults. However the physical activity levels of children have not been so extensively explored, a time when habits, likes and dislikes are being formed, and this is where the research will seek to fill in some of the gaps.

Research into the levels of children's physical activity is important, as the actual level achieved of physical activity is difficult to judge visually. These levels cannot be identified instantly or are difficult to identify without the use of specific measurement tools, such as pedometers, heart rate monitors or accelerometers. It is not easy to question or to examine whether a child is actually achieving the recommended daily targets of physical activity (World Health Organization [WHO], 2010). Therefore teachers and parents may not know whether initiatives that are introduced within school are benefiting the children, nor if Physical Education provision contributes to physical activity levels. This research sought to address this by examining (a) children's physical activity within the school day, (b) the differences and similarities in physical activity levels of infant (aged 6) and junior aged children (aged 10), (c) where the opportunities for physical activity are within the school day and how these might be increased; and (d) what the contribution of Physical Education might make towards overall physical activity levels. Completing this exploration may also help to educate the children in the understanding of their own physical activity and improve children's physical activity participation and opportunities within the school day. Without knowing this information schools cannot reasonably take or be given responsibility for children's physical activity.

The 'New Labour' party was elected into power in the United Kingdom from 1997 until 2010, during which the data were collected. The physical activity guidelines outlined by this government (Department of Health [DOH], 2005) as well as WHO (2010) are central to this research. They recommended that children should be physically activity at a moderate to intense level for sixty minutes a day. When day is referred to, this is the whole 24 hours of the day, not the waking day, nor the school day and the 60 minutes of physical activity can accumulate throughout the day

(Gilson, Cooke, & Mahoney, 2001; WHO 2010). While other research (National Institute for Health and Clinical Excellence [NICE], 2009) suggests that the accumulation has to be within 10 minute bouts as a minimum, Gilson et al. (2001) and WHO (2010) do not make this stipulation. Therefore within this research all moderate to vigorous physical activity will be recorded through an accumulation method, and not limited to 10 minute bouts. Children spend half their waking hours, 7 out of their 14 hours, within the primary school setting (Owens, Spirito, McGuinn, & Nobile, 2000). Therefore school life has the potential to have a significant impact on primary aged children's lives. This only leaves 5-7 hours outside of school while they are still awake (Breus, 2008). It is not surprising that the responsibility of physical activity levels is often suggested, to fall within the school responsibility.

BACKGROUND:

Johns' 2005 study (as cited in Kirk, 2006) suggests that "...when children are mentioned in the obesity crisis discourse, school Physical Education, is implicated immediately, both as a source of and as a possible solution to the problem" (p.122). McMinn, Rowe, Stark, & Nicol (2010) support this by suggesting that "...school settings have been identified as key social establishments in which to promote physical activity and wellbeing, particularly through the medium of school clubs and Physical Education lessons" (p.68). Trost (2007) echoes this suggestion that "...schools serve as an excellent venue to provide students with the opportunities", but he highlights that this is often not the case and that "...most children get little or no physical activity in school" (p.1), therefore impacting on the child's physical development health and wellbeing. Green (2002) also emphasise the importance of Physical Education and suggest it is '...the most suitable vehicle for the encouragement of a lifestyle which is both healthy and physically active. Trudeau, Laurencelle, Tremblay, Rajic, & Shepherd (1999) and Howells, Caple, & Jones (2010) found that primary school children who participated in daily Physical Education benefitted in terms of their physical activity throughout the school day and later on in life.

Kolle, Steene -Johannessen, Klasson-Heggebø, Andersen, & Anderssen (2009) suggest that "children's physical activity has provided serious measurement challenges for researchers" (p.1368). They propose this was challenging due to the nature of the children's behaviour in that they tend to find it difficult to estimate their own behaviour when self reporting and they also find it difficult to recall in detail their physical activity patterns. Children's physical activity participation is rarely lengthy and is more often made of intermittent and spontaneous patterns (Kolle et al., 2009). Ziegler (1994) suggests school Physical Education lessons provide a more regular context for structured physical activity participation which will ultimately aid children's health. Fairclough & Stratton (2006) agree and suggest that a Physical Education lesson could be considered as being a pure opportunity to get children physically active. They describe elements within Physical Education lesson such as motor, cognitive and social development as being hindrances in the achievement of this physical gain. Yet Doherty & Brennan (2008) argue against these ideas and state that there is much more to school Physical Education lessons than just being physically active. Physical Education is about the whole education process of the child "that is concerned with lifelong physical, intellectually, social and emotional wellbeing that accrues through experiencing physical activities in a variety of

contexts" (p.6). By using this whole education process approach within school the child's attitudes and interests in physical development and Physical Education can be fostered and an understanding of the importance of not only exercise, but diet and healthy lifestyles can be imparted, rather than just simply providing exercising opportunities for every child. However, it is important for school, class teachers, the children and teacher educators to know how physically active the children's "existing physical activity levels prior to suggesting any solutions or strategies for primary schools" (Howells et al., 2010, p.24). Just children's physical activity and experience of Physical Education in school can help determine their engagement in lifelong physical activity. Therefore, it is important to map the children's physical activity levels, within the school day and to examine the contribution of Physical Education lessons.

PURPOSE/RELATED RESEARCH QUESTIONS:

The purpose of this research was to explore the physical activity levels of primary aged children and the contribution of Physical Education lessons to physical activity levels. The following research questions are addressed in the study:

1) Is it possible for primary aged children to reach the UK Government's (DOH, 2005) and the WHO's (2010) recommended target of 60 minutes of moderate to vigorous intensity of physical activity during the school day?

2) What is the contribution of Physical Education lessons to overall physical activity levels for primary school children?

3) Does the contribution of Physical Education lessons make to overall physical activity levels vary according to year group and gender?

METHODOLOGY:

Research Design
The research was conducted within a primary school which followed the English National Curriculum (Department of Education and Employment [DOEE], 1999). Greig, Taylor, & MacKay (2007) suggested that research that involves children needs to be seen from as many different directions or angles as possible as children are very complex. Therefore, the overall approach was a mixed methodology, used for "empirical data collection, using numerical and verbal data in order to gather well rounded, reliable data" (Cohen, Manion, & Morrison, 2007, p.5). Silverman (2006) supports this approach as it allows for a "deeper understanding of a social phenomena" (p.56) such as the physical activity that occurs within the school day and aspires to bridge the gap between the theory of children needing to reach the recommended targets and the practice of what is actually happening within the school day. The mixed methods that were used were a case study, ethnographical style, longitudinal, and action research. The case study was used to "provide detailed information" (Thomas, Nelson, & Silverman, 2005, p.19) on the current levels of children's physical activity within the school day. The ethnographical style was used as it allowed the researcher to be immersed in the school setting and collect the daily practices, of the children's physical activity within their natural setting (school). The longitudinal approach was deemed appropriated as most previous research has considered children's physical activity levels over a period of 3 days (Duncan, Al-

Nakeeb, Woodfield, & Lyons, 2007) up to 7 days (Belton, Meegan, Brady, & Woods, 2009). These lengths of time allow for a snapshot of that particular time for those particular groups of children. By completing the research over a whole academic year allowed for the data to capture the true nature of the physical activity of the children within that period, rather than one snapshot, which is supported by Thomas et al. (2005). The final approach was action research, which McNiff & Whitehead (2002) defined as "a way of researching your own learning". This is particularly important for teachers as teaching itself is a reflective and reflexive profession (Browne & Haylock, 2004). By looking at the current practice and the children's physical activity levels, which occur within the primary school setting would provide insights and potential solutions for this particular school.

Geographically the school in this research is set just outside Ashford, in the South East of England. The school is a relatively small, rural Church of England school with 180 children and only seven classes. The school day runs from 9am until 3.10pm. The children have opportunities to be physically active outside of the classroom and Physical Education lesson, during break times. For the junior children, they have a morning break time and lunchtime, whilst the infant children have a morning, lunchtime and an extra afternoon break time. The school was also selected due to their physical activity policy and healthy school dinners, which earned them the recognition of a health school mark (Healthy Schools, 1999). They also have class teachers who have specialised in Physical Education (Carney & Howells, 2008) and therefore were providing the best possible high quality Physical Education lessons within the school. Additionally, the school was chosen due to previous collaborative work conducted within the school, which according to Thomas et al. (2005) is important within research, as "rapport is everything" (p.349).

Data Collection
The data was collected using ActiGraph (7164 model) accelerometers (ActiGraph, Florida) which were shown by Janz (1994) and Janz, Witt, & Mahoney (1995) to be valid, reliable and objective method for monitoring physical activity in children. The ActiGraph was worn in a pouch on the belt around the waist. Welk (2002) asserts that this positioning is regarded as the most appropriate design to be used within primary school aged children, as it picks up "normal locomotor movements and participants find it less obtrusive for sitting and moving around" (p.126). Twenty children volunteered to take part in the research and the children came from two classes; juniors (aged ten) and infants (aged six). The children wore the accelerometers and data was collected from 9am until 3.10pm for 60 days. 30 of which were days that included a Physical Education lesson (which lasts 60 minutes) and 30 days that did not include a Physical Education lesson. The accelerometer data recorded acceleration counts in a 1 minute cycle time sampling interval. This was chosen due to the amount of data (16 million rows of data) that would be produced. This sampling interval would consider sustained physical activity and would filter out noise of the children potentially fiddling with the accelerometers, which was expected to occur due to the age of the children. The 1 minute activity counts were downloaded and converted into METs and then analysed using SPSS 17.0 for Windows. An Analysis of Variance (ANOVA) was used to compare the physical activity levels of children according to the type of day, year group and gender. A p-level of <0.05 was accepted as statistically significant.

Ethical approval was gained from Faculty of Business and Sciences Research Ethics committee at Canterbury Christ Church University. Permission and informed consent was sought and gained from the children's parents, from the school and from each child before commencing in the research. The right to withdraw at any time was discussed with all three parties as well as the process of confidentiality. The parents were also kept up to date and informed with newsletters throughout the research and as Greig et al. (2007) state that it is important to maintain a good relationship with the gatekeepers of the children e.g. the parents or caregivers. The research was explained to the children and any questions were answered.

FINDINGS AND DISCUSSION:

The mean number of minutes of physical activity, at and over 3 METs, was recorded (see figure 1). It was found that the overall mean number of minutes of physical activity at and over 3 METs for all children was 53 (±19) minutes for the days that included a Physical Education lesson and 43 (±15) minutes for the days that did not include a Physical Education lesson. This is under the recommended Government's (DofH, 2005) and WHO's (2010) target level of 60 minutes of moderate to vigorous intensity (at and over 3 METs) physical activity levels per day. However there was a significant difference (F = 92.32, P < 0.05) for the type of day and this indicated that children were significantly more physically active on days that included a Physical Education lesson.
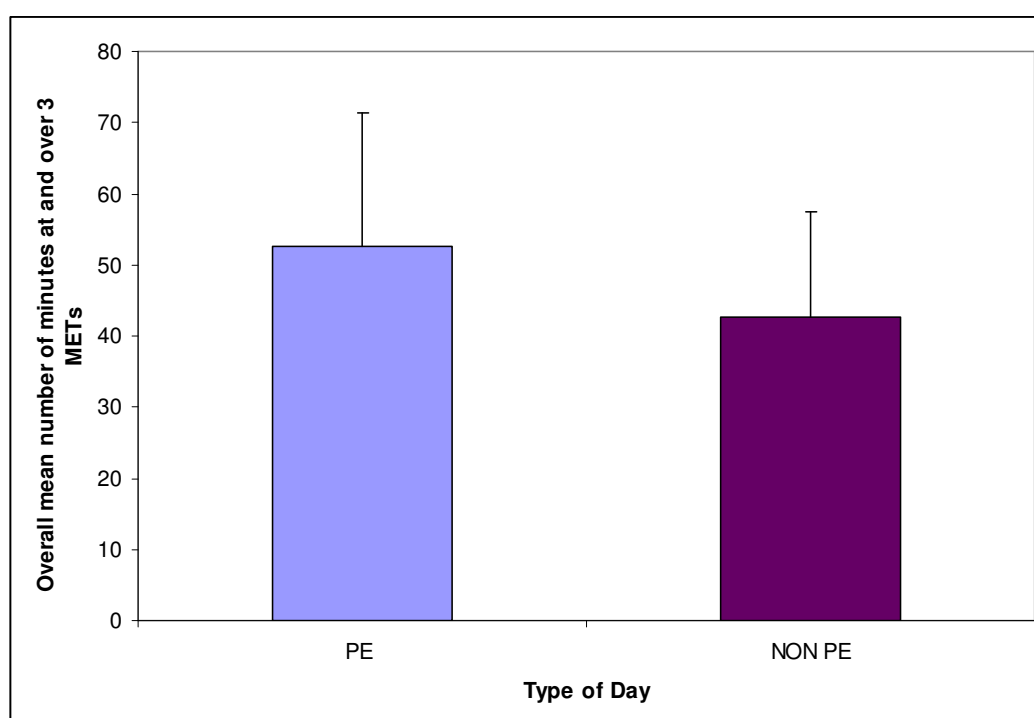

Figure 1: Overall mean number of minutes at and over 3 METs (±SD) according to type of day.

Year group and gender was also analysed (see table 1). It was found that there was a significant main effect of gender, (F = 9.04 and P < 0.05) with boys completing between 5 and 9 minutes more physical activity at and over 3 METs than girls. There was also a significant interaction between gender and type of day, (F = 4.47, P < 0.05) and a significant interaction between type of day and year group, (F = 6.77, P < 0.05). Interestingly there was no significant main effect for year group. It was found that only junior boys were able to reach the UK Government's (DOH, 2005) and the WHO's (2010) recommended target for physical activity, per day, but only on days that include a Physical Education lesson.

Table 1: Overall mean number of minutes (±SD) of moderate to vigorous physical activity, at and over 3 METs, for year group and gender according to type of day.

Year	Gender	PE (minutes)	NON PE (minutes)
2	Boys	53 (23)	46 (17)
2	Girls	42 (13)	38 (11)
5	Boys	60 (13)	45 (12)
5	Girls	53 (15)	40 (13)

IMPLICATIONS AND RECOMMENDATIONS

This study has identified the current physical activity levels that primary aged children within this case study school experienced on days that included a Physical Education lesson and days that did not. It was found that only junior boys are able to meet the UK Government's (DOH, 2005) and WHO's (2010) recommended targets within the school day. Whilst no intervention was carried out in this study it does however produce important information of the levels of physical activity achievable within the school curriculum day for that primary school. It is important to know what is occurring within the school day before any solutions or strategies are suggested (Howells et al., 2010). It could be argued however that as children only spend half their waking hours in school (Owens et al., 2000), and that school should be responsible for half of the recommended targets of physical activity. If this approach is considered acceptable and school's responsibility is to ensure children are able to reach 30 minutes of physical activity at moderate to vigorous physical activity levels per day. Then this research shows that the school is achieving way beyond this for all children.

From the results it could be suggested that days including Physical Education lessons actually encourages children to be more physically active, (at a moderate or intense level), as all children achieved a higher number of minutes at and over 3 METs. Currently however from these results and analysis, it is acknowledged, that it is unknown whether it is the actual contribution of the Physical Education lesson or the knowledge/idea of having a Physical Education lesson within the day that encourages this increase in overall physical activity experienced within the school day.

Therefore rather than the accumulation of physical activity within the different types of day, (those that include a Physical Education lesson and those that do not) a further

analysis of the different parts of the school day is needed. It may be beneficial to examine for example what physical activity occurs in morning break, lunch time, afternoon break, during curriculum time (but not the Physical Education lesson) and Physical Education lesson needs to be examined to map out in more detail where and when moderate to vigorous physical activity levels occur. It is from this further analysis that suggestions for opportunities to potentially increase the physical activities of the children within the school day can be identified.

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PERCEPTIONS OF A PRE-SERVICE TEACHER ON WHAT INFLUENCES HER PLANNING DECISIONS

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INTRODUCTION:

Teacher education devotes much time in teaching pre-service teachers (PSTs) how to write and prepare lesson plans. John (2006) suggested that for some PSTs this process "holds creative possibilities, for others it is a brick wall" (p. 483). Tyler's model (1949) which presents a linear approach to planning has been the dominant approach used by teacher education. The model proposes defining objectives, establishing useful learning experiences, organizing the learning environment and evaluating learning. However, findings suggest that although teacher education teaches this model in practice, teachers plan using a different approach (Goc-Karp & Zakrajsek, 1987; John, 2006). Research suggests teachers focus on planning around activities and content as opposed to planning with a focus on objectives (Goc-Karp & Zakrajsek, 1987; John, 2006). Currently research (John, 2006) questions the appropriateness of Tyler's model and suggests it does not cater for the ad hoc happenings that take place in the classroom. Regardless of approach, few would contest the significance of planning for teaching and learning.

BACKGROUND:

While much research presents findings on planning in relation to what teachers and PSTs plan for as well as the effect and impact of planning on teaching (Byra & Coulon, 1994; Goc-Karp & Zakrajsek, 1987; Imwold, Rider, Twardy, Oliver, Grffin, & Arsenault, 1984; Kagan & Tippins, 1992; Twardy & Yerg, 1987), no research was found with a primary focus on what influences PSTs decisions around planning. In considering Cochran-Smith's (2005) argument that little is known about how PSTs apply knowledge in the classroom we suggest it is critical to understand the influences on and the role of planning for PSTs before we can begin to understand and make sense of their application of knowledge in the classroom.

Teacher Education Teaching Practice Criteria

As part of a larger learning to teach study this paper presents findings on one PSTs' knowledge development and how it influenced her planning during teaching practice. The PSTs in this study are undergraduate students studying in a four year BSc programme in physical education in Ireland. As part of the programme they participate in two block teaching practice experiences in post primary school settings. These placements occur in their 2nd and 4th years of the programme over a six and ten week block respectively. Keeping with Tyler's approach to planning the PSTs are required to prepare schemes of work, lesson plans, post lesson appraisals and a weekly reflection. In turn their teaching consists of a minimum of nine physical education lessons per week in order to receive Teaching Council recognition. All

planning materials are submitted to their tutor who observes two lessons being delivered in each of the two placements. PSTs also teach an elective subject with the same planning criteria and observation obligations but with a second tutor assigned for this subject area. Pre-service teachers receive one agreed grade from their two tutors for the entire placement. The 2nd year placement contributes towards the PSTs yearly grade with only the 4th year placement contributing towards the final course grade.

RESEARCH QUESTIONS:

Research questions include: What role does planning have for PSTs? What influences PSTs' planning decisions? Furthermore, what decisions do PSTs make around planning?

METHODOLOGY:

Findings presented are based on one element of the three year longitudinal study focused on PSTs learning to teach. The overall study comprises two phases. Phase I consists of one cohort of physical education PSTs being followed throughout their 2nd and 4th year teaching practice placements. Phase II follows a second cohort of PSTs through the same teaching placements in their 2nd and 4th year. All PSTs volunteered to be part of the study. The findings presented in this paper are of Elaine, a PST who participated in Phase I of the study. Elaine had just completed her second and final teaching practice placement in her 4th year of her teacher education. Elaine's story provides a glimpse of her perceptions of her teaching, specifically related to teaching outdoor adventure, which she developed over her four years of teacher education. It's important to note that over the past three years Elaine experienced 2nd year teaching practice in which her practices were studied and has completed courses involving pedagogy relating to physical education and education. Insights gained from the overall study and a richer picture of Elaine and her development are to be reported in upcoming publications. This paper will focus only on the second half of Phase I during her 4th year teaching practice.

Data Collection and Analysis

Phase I consisted of two data collection components, one during 2nd year teaching practice and the second during 4th year teaching practice. Both teaching placements took place in post primary schools in the Munster region in the southwest of Ireland. Data collected during the first half of Phase I, 2nd year teaching practice for Elaine included planning materials (schemes of work and lesson plans), two lesson observations, researcher field notes, a post lesson discussion and a focus group interview. The focus of this first element of Phase I was to gain knowledge on Elaine's understanding of outdoor adventure education, what elements of outdoor adventure she was teaching and what challenges she encountered when teaching outdoor adventure. Results of the first half of phase will not be reported here although Elaine herself may make reference to her developing knowledge and teaching of adventure education that was influenced in this 2nd year placement. Data collected during the second half of Phase I took place after Elaine completed her 4th year teaching practice placement. Elaine participated in an individual interview with one of the researchers. At the beginning of the interview Elaine spent ten minutes filling out a prompt sheet containing questions on the topics to be discussed during the

interview. The purpose of the prompt sheet was to aid discussion by giving Elaine some time to consider her views and develop examples to support her discussion for the interview. It was deemed this prompt sheet would also help validate data as well as highlight any discrepancies should they arise in the interview. The interview was focused on gaining knowledge on Elaine's understanding of adventure education, her decisions and influences surrounding both her planning and teaching of adventure education, challenges she encountered and what she was teaching as outdoor adventure. Elaine's interviews, focus group and individual took place in the university where Elaine was studying. Elaine was commencing her 8th and final semester of the four year programme when the interview took place on campus. Elaine's interview was transcribed for analysis. Data were inductively analysed (Creswell, 2007) through identifying and assigning themes, groupings and relationships. The researcher developed Elaine's story from comments and perceptions she shared during the interviews and drawn from her prompt sheet.

FINDINGS:

Elaine's Story…

Elaine is in her 4th and final year of her teacher education programme and has just completed her final teaching practice placement of ten weeks in a mixed post primary school. The school constituted predominately male students with a ratio approximately of one female to five males. Elaine taught five lessons to a transition year class (aged 15-16yrs) as part of a physical education adventure scheme of work (unit).

Initially Elaine was 'horrified' by the 'status' and 'setup' of physical education in the school and expected much student resistance. Although the school had a climbing wall facility no outdoor adventure education was taught. Elaine noted her co-operating teacher used the climbing wall mainly for time filling purposes at the end of classes. Although nervous about her decision to teach outdoor adventure, Elaine believed it to be more inclusive for students than 'game like' activities and it afforded an alternative focus to 'just skills'. Soccer and basketball were the primary physical education focus of the school.

Elaine liked structure and to be in control of her lessons. Although control was a prominent theme for Elaine, having a good rapport with students was also prominent as she was very conscious of how students perceived her. She discussed planning activities to 'keep students on board' and after her first lesson adapting activities to pull students along, especially the girls, she found herself having to adapt content to fit in to their system. It was important for Elaine that her students enjoyed activities. She discussed using teaching practice as an opportunity to 'try' things, one being a full value contract, as there would be little repercussion if it failed. However she also discussed much of her routine as primarily focused on fulfilling teaching practice criteria in order to achieve a good grade. However towards the later end of her placement Elaine suggested she was 'shocked' with the positive level of participation

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of her students during her outdoor adventure lessons as it was not what she had expected.

Elaine believed planning on paper was one thing but planning for a lesson was something different. She believed lesson planning and lesson reflections were predominately paper and pencil exercises necessary to fulfil teaching practice criteria. She suggested that should she develop an idea post lesson plan write up she would have no problem diverging and not preparing a new lesson plan. She did however suggest that when a lesson plan was typed it was more valuable than when not, but suggested this boiled down to confidence. Although Elaine could see the value in lesson plans she believed they were only necessary when she was not confident in what she was doing, which was the case for her in outdoor adventure due to an insecurity she had of teaching its content. She was a lot more comfortable teaching games and suggested she could teach a games lesson without having to prepare a lesson plan.

Elaine planned lessons for team challenge (n=2), camp craft (n=1), orienteering (n=1) followed by climbing wall (n=1) activities over the five weeks. The order of lessons in relation to content choices was important for her as she believed students could apply team challenge skills in camp craft and orienteering activities that would follow. When planning and developing her outdoor adventure lesson plans, Elaine 'reshuffled' and changed activities from her 2nd year teaching practice lesson plans and integrated these into her new lesson plans. Despite this Elaine suggested the planning of resources took a considerable amount of time to develop. Unlike her 2nd year teaching practice placement there were no outdoor adventure resources available in the school. Elaine used ideas from her teacher education and the internet to prepare resources which she in turn adapted to suit her class. Elaine was greatly challenged by the lack of interest and enthusiasm of her co-operating teacher towards the teaching of physical education. Although at times wondering why she was doing all this work, Elaine felt she could have gotten away without doing a lot of what she did, but she wanted to show her co-operating teacher it could be done. She felt disheartened when no support was shown towards her efforts. As a result of spending so much time preparing materials, Elaine was determined that her students would learn during her lessons otherwise she considered it a waste of her time.

Elaine's teaching practice tutor did not emphasise the need for assessment during her lessons and as a result she did not formally plan for this aspect of learning. Had her tutor placed emphasis on this she suggested she in turn would have integrated this throughout her lesson plans. In keeping with her decision for teaching outdoor adventure Elaine did not formally plan to integrate debriefing into her adventure lessons yet used it informally as she believed it gave students a voice. She based her questions on what she perceived to have experienced during teacher education and if students were having difficulty on a task. Elaine did not use reflections to inform her planning.

(Elaine, Individual Interview and prompt sheet, Post 4th year Teaching Practice)

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DISCUSSION:

This section of the paper will discuss what Elaine's story reveals about the research questions that guided Phase I of the study.

Role of formal lesson planning for Elaine

Data revealed that formal lesson planning provided Elaine with the confidence she needed when teaching adventure lessons. She believed it was essential for resources and activities to be clearly planned especially at the beginning of her teaching as she was "...nervous with a hesitant and unfamiliar class", (Interview prompt sheet, p.2). Due to her lack of confidence in teaching adventure Elaine spent more time planning and preparing resource materials for these lessons than for any other content area. In fact she believed it was not necessary for her to formally plan for other content areas such as games due to her familiarity and comfort with games content and only did so as a requirement of the teacher education programme. Elaine was explicit in her belief that formal planning was predominately a paper and pencil exercise necessary to fulfil teaching practice criteria. Aligning with John (2006) Elaine did however note that planning helped guide and assist her in being flexible in her teaching which she affirmed as being a key skill for teaching.

Influences on Elaine's planning

Teacher education, the internet, lack of school resources, planning for student enjoyment as well as a lack of co-operating teacher interest were among the main influences on Elaine's planning. As requested by her teacher education programme Elaine planned for her teaching of outdoor adventure lessons with a scheme of work and a series of lesson plans. Her comments suggest that formal planning took place due to her lack of confidence in teaching the subject as well as owing to the fact that she was being graded. Supporting evidence on the influence of teaching practice criteria on her planning was evident in her discussion when she noted not addressing or integrating assessment because this was not emphasised by her tutor. Her discussion on her lack of integration and her pencil and paper approach to post lesson appraisals also align with this perspective. This may suggest Elaine planned with a primary focus on fulfilling her own teaching practice required criteria as opposed to planning for student learning.

As Elaine's school did not typically teach outdoor adventure there were no resources available to support her teaching in this subject area resulting in Elaine spending an inordinate amount of time planning and preparing resources. A lack of resource availability therefore strongly influenced her planning and how she carried it out. Ideas and resources for teaching outdoor adventure that Elaine chose included those gained from her teacher education and by accessing the internet. Elaine discussed how she adapted these resources in a way where she felt comfortable teaching. Interestingly, Lowenberg-Ball & Feiman-Nemser (1988) found that PSTs who chose to prepare their own 'resources' and not use 'textbooks' were unable to 'see' the content they were teaching and became engrossed in the activities as opposed to the content being learned (p. 420). While Elaine certainly spent time in developing and utilising resource materials there is no way of knowing if this holds true in this situation as her lessons were not observed during this phase of the research, and therefore no evidence to support these findings is available. Elaine was however, explicit in outlining that as soon as she enters the teaching profession, although she

suggested she would continue to formally plan for outdoor adventure, planning will consist solely of recording a list of activities. This aligns with findings from several researchers who conclude that teachers apply a different approach to planning than they experience in teacher education (Goc-Karp & Zakrajsek, 1987; John, 2006; Peterson, Marx, & Clark, 1978; Yinger, 1979; Zahorik, 1970).

As a means of compensation for spending so much time preparing materials for her adventure lessons Elaine was adamant that her students would learn. Keeping this in mind it's interesting to note that when asked to share a successful activity Elaine discussed one for which she was 'forever' preparing resources and during which students were very 'enthusiastic', with student enjoyment also being important. She suggested students learned a lot in the class; however, it is unclear how she arrived at this conclusion as Elaine did not provide evidence to support this claim. Considering Elaine's concerns over participation, inclusion and resistance that she shared early in the interview, and the value she placed on time spent preparing resources, perhaps it was her time spent planning and the level of student enjoyment that were the deciding factors for her choosing this as a successful activity as opposed to one in which students may have more clearly learned. However without more evidence, this is purely speculation.

Elaine felt her co-operating teacher lacked motivation and interest in both physical education and outdoor adventure education. This lack of a positive and responsive attitude from her co-operating teacher served to inspire Elaine making her more determined to show him what could be done. While on the one hand she was disheartened by the lack of support she received it appeared to impact her determination in demonstrating she could be successful in teaching outdoor adventure and that the students could benefit.

Decisions Elaine made around planning
Planning appropriate lesson progressions through the experiential learning cycle was among the decisions Elaine made around planning for outdoor adventure. Team challenge, camp craft, orienteering and climbing activities were the lesson themes Elaine chose for her adventure lessons and for which she planned. When looking at the principles and concepts associated with outdoor adventure Elaine chose to integrate but not plan for debriefing. In other words, while Elaine planned a progression of activities focused on the themes outlined above, without using specific and well defined debriefing questions it would be difficult for students to know what they learned in each task in order to build upon it in the next. In looking more closely at Elaine's planning decisions and her choice not to formally plan for debriefing of activities, it is worthwhile noting that although not formally planned Elaine indicated she frequently integrated debriefing during her lessons. There was no evidence to suggest that she took the next step and linked one activity or one learned concept to another as would be done through the experiential learning cycle. She suggested basing her debriefing questions on how she remembered having experienced them during teacher education.

To begin, Elaine planned for co-operative activities to enable her to 'suss' out students and introduce them to the concepts of adventure education. For example, while Elaine did formally plan to implement a full value contract which was intended to guide students in their interactions and support of one another, no planning

decisions were made in relation to the concept of challenge by choice which would have had specific implications for individual students who might feel uncomfortable with specific aspects of lessons. In another instance, Elaine planned that students would apply team challenge skills during camp craft and orienteering activities. While remaining focused on her progressive planning decisions Elaine adapted her approach to her lessons to encourage student participation. She began planning for the integration of team challenge skills into game like activities such as basketball by introducing a blitz at the end of each lesson "...everybody on the team had to get passed the ball for you to score a point..." (Elaine, Post 4th yr TP Interview, p.3). Through this Elaine believed she was accommodating and catering for all students to participate and to apply adventure principles beyond the sports hall. Without having observed Elaine teaching outdoor adventure during her final placement there is no evidence to confirm or deny that students applied these skills as she expected, or that they understood the idea of transferring what they had learned as an adventure concept to a game situation. The fact that Elaine did not plan for debriefing the activities would suggest that the students did not have the opportunity to share what they learned or what it meant to apply the co-operative skills they may have used.

IMPLICATIONS AND RECOMMENDATIONS:

Teaching practice highlights the complexities and pressures for pre-service teachers. Not only do they have to cater for students but they also have to attend to tutors, teachers and principals also.

Through studying Elaine's story it is evident that she was prepared to follow teacher education planning guidelines introduced in her education yet it appears this was done for the purpose of achieving a grade rather than to promote student learning. It is less clear however, what influence Elaine's planning had on her actual teaching practice, and is an area for further study. While Elaine believes that planning for teaching is important, formal lesson planning is only beneficial when she is not confident in the content which she is teaching to students. This perspective, while not uncommon does not align with the importance placed on lesson planning by most teacher education programmes, and is certainly worth investigating to determine if there is a way to merge the two opposing views. Noteworthy, although inconclusive, it appears that Elaine's planning was much more focused on student participation in preference to achieving learning objectives. From our perspective as teacher educators, this is a worry as it paints a picture that looks more like recreation than physical education.

In gaining an understanding of PSTs' application of knowledge, Cochran-Smith (2005) indicates it is critical to understand the role and impact planning has on and for PSTs' teaching. John (2006) suggests the lesson plans should be viewed as a 'record of interaction' as opposed to a 'blueprint for action'. Considering the lesson plan as a record of interaction and the complexities of understanding the role of planning for teaching we recommend examining the PSTs' decisions around planning, teaching and reflecting through all elements of teacher education including teaching practice. It may be that this focus on long term planning may move the focus away from planning for a grade to planning for student success. We recognise the need to understand how PSTs actually plan for their teaching, what influences both planning and teaching decisions and in turn PSTs' understandings around their application in the classroom.

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ASSESSMENT FOR LEARNING IN IRISH PRIMARY SCHOOL PHYSICAL EDUCATION

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INTRODUCTION:

Formative assessment or assessment for learning (AfL) has been described by Clarke (2008) as "any practice which provides information to pupils about what to do to improve" (p.9). While assessment is considered to be an integral part of teaching and learning across all subject areas of the Irish Primary curriculum, an ongoing debate remains around how effectively assessment can be implemented in Physical Education (PE). Casbon & Spackman (2005) point out that the aim of assessment in PE should be to improve pupil progress, provide a greater feeling of confidence and competence in the area as well as to help pupils adopt a better attitude to it. Plant (2007) views assessment as an "extremely powerful tool" within Physical Education but also outlines how many teachers are unable to utilise assessment in a manner that will provide the optimum benefits for pupils (p.26). Martin, Kulinna, & Cothran (2002) argue that our role as educators in PE is important as it is our approach to assessment that ultimately instills a more positive experience of and attitude to improvement in the area. The influential international review by Black & Wiliam (1998) concluded that formative assessment was a powerful leverage for improvement in pupil achievement, especially in the achievement of the perennially low achievers. What was unclear from this study was the extent to which formative assessment could impact positively on learning in PE. Indeed, a feature of the literature on assessment is the dearth of research in this area. That said, there is growing literature on strategies that enable teachers to implement assessment for learning in their classrooms (Casbon & Spackman 2005; Plant 2007). Many of these strategies seem to have potential for the PE context.

BACKGROUND:

Assessment for Learning (AfL) In Action
Thompson & Wiliam (2007) outline that among the key strategies to consider when implementing AfL in classrooms are sharing learning intentions and success criteria with pupils, feedback that moves learners forward, and pupil self-assessment.

Deeply imbedded within the key AfL strategies is the need for collaboration between the child and the teacher in relation to clarification and understanding of learning intentions and also the success criteria associated with them. Thompson & Wiliam (2007) describe assessment as a "cyclical process" which should be part of everyday learning and it is vital to change teacher's attitudes from a focus on teaching to a focus on learning (p.10). According to Clarke (1998) the practice of sharing learning intentions with pupils seems to be happening more frequently in schools, especially in the UK. Black & Wiliam (1998) highlight the need for clearly explained learning

intentions and argue that "pupils can assess themselves only when they have a sufficiently clear picture of the targets that their learning is meant to attain" (p.142).

Formative assessment is important in not only enabling the teacher to give feedback to the pupils but also in providing pupils with the opportunity to give feedback to the teacher. Gallo, Sheehy, Patton, &Griffin (2006, p.47), point out that, "when assessment is part of the teaching and learning phase of instruction, its primary purpose should be to provide feedback to students and the teacher". Clarke's (1998) research suggests strongly that feedback can assist pupils in deciding the next steps in their learning and also encourages them to take more responsibility for, and pride in, their learning. In a summarisation on the benefits of high quality feedback to learner's Casbon & Spackman (2005) state that to be effective feedback must not simply be about teachers telling pupils about how they're doing but more importantly "encouraging them to be reflective about their work" (p.18).

Gallo et al. (2006) also claim that assessment can heighten pupils' awareness of their own learning in a way that makes them "active stakeholders" in the learning process (p.47). In the PE context Spackman (2003) argues that when pupils are encouraged to self-assess their motivation increases which in turn impacts positively on their achievement. Within the Irish context, the National Council for Curriculum and Assessment (NCCA, 2008a) also make the valuable point that self-assessment "contributes to a positive classroom climate in which making mistakes is considered central to the learning process" (p.14). It is worth noting that within the PE teacher guidelines accompanying the 1999 primary curriculum there is no mention of self-assessment or peer assessment.

PURPOSE/RELATED RESEARCH QUESTIONS:

The study described in this paper investigates the extent to which the AfL strategies of sharing learning intentions/success criteria, feedback and pupil self-assessment can improve the quality of pupils's learning and achievements in PE. The study was implemented in the form of an action research project in the classroom of the first author. Action research has been described as "a systematic study that combines action and reflection with the intention of improving practice" (Cohen, Manion, & Morrison, 2007, p.297) "involving practitioners, both teachers and supervisors, so that they better understand their work." (Glanz, 2003, p18).

METHODOLOGY:

The project consisted of four lessons that were taught over the duration of a month to 26 boys between the ages of nine and ten. Prior to the study many pupils in the class were not particularly motivated to participate in PE. Learning intentions and success criteria were not discussed with the pupils before the first lesson but in advance of the remaining lessons time was set aside in the classroom for this AfL strategy before the pupils went for PE in the school hall.

Throughout the course of these lessons the teacher carried out structured observations, recorded pupil comments and maintained a reflective journal based on the lesson observations. The pupils completed a learning log at the end of each lesson They were encouraged to record what they enjoyed or did not enjoy, what skills they had to

complete and what they had learned. In addition, the lessons were videoed and pupils were asked to provide short written responses to the video evidence. The teacher also conducted a set of group interviews with six pupils. Finally, all pupils completed a questionnaire at the end of the month. The principal aim here was to gather data on pupil's reaction to the AfL strategies. It should be noted that all ethical guidelines were followed during the course of this research including the parental consent for pupil participation.

FINDINGS AND DISCUSSION:

The first lesson on gymnastics involved creating sequences which included a jump, wide and narrow balances, and wide and narrow rolls. The pupils were not given any guidelines as to the purpose of the lesson and simply followed the teacher's instructions. No discussion took place before the lesson to identify learning intentions/success criteria. The pupils completed their learning log after the lesson and on reviewing them it was clear that the vast majority had little idea of what the learning intentions were. The most common entry referred to the fact that they were learning to "improve skills" and although many pupils mentioned the sequences, they omitted the key learning intentions of creating wide and narrow balances, and also wide and narrow rolls within their sequences.

The second lesson, on a similar topic, began with a general discussion about learning intentions and success criteria. In light of Clarke's (1998) exhortation about the importance of making the learning in each lesson explicit, time was spent in this and subsequent lessons ensuring that the pupils understood the learning intentions/success criteria for each lesson. Throughout each subsequent lesson relevant feedback based on the learning intentions and success criteria was provided to the pupils. A review of the learning logs revealed an improvement in pupils' awareness of their own learning, with the majority of pupils clearly identifying the learning intention of each lesson. Significantly, many learning logs also contained references to how pupils could improve their performance.

What follows now are some of the key messages that emanated from the data gathered during the course of the research. They are presented as a set of six key themes.

Key Theme #1: *More Focused Feedback*
In the teacher's reflective journal, specific areas and skills that needed reinforcement were noted and were used as the basis for planning future lessons. In subsequent lessons ongoing feedback was provided to the pupils, which was centred on the success criteria discussed before the lesson. In addition, pupils were questioned on what they felt the key aspects of the skill were, i.e. success criteria. It was noted in the teacher's reflective journal that by encouraging the pupils to think about the success criteria, they were better able to respond to feedback and were better able to identify what they were doing well. The pupils' learning logs highlighted their awareness of their own performances as many pupils included aspects of teacher feedback in their work. One pupil also noted in the questionnaire how he not only used the teacher's feedback as a guide to improve, but also worked with a partner to figure out how to improve. In general, the data indicated that most pupils became more conscious of what was required to accomplish each skill and came to recognise that it knew these factors that enabled them to assess their performances and to receive and give feedback.

Key Theme #2: *Positive Changes in Attitudes to PE*

While it was observed by the teacher that the pupils experienced a sense of achievement which boosted their self esteem, with children stating that they were now "good at PE", the learning logs also highlighted pupil awareness of improvements that were needed. One child commented "I can actually do PE now" . This finding is supported by Clarke (1998) who noted that teachers who use shared learning intentions with pupils witnessed changes in "pupils's application and attitude to their work and learning" (p.55).

In the interviews, the pupils were asked to explain how they would know if a performance of a particular skill was good or not. Most pupils answered that they knew by checking the performance against the success criteria. The pupils also pointed out that knowing the learning intentions was like getting advice and that this encouraged them to do well. Another pupil commented that he could tell if he was "doing it proper" by observing other pupils and by his partner giving him feedback. Many said they felt "good" about PE and could see that they were improving.

Key Theme #3: *More Effective Use of Time for PE*

As the lessons progressed, the teacher noted in her reflective diary that many pupils' eagerness to learn new gymnastic skills and their willingness to get straight to the tasks, particularly in creating sequences, had improved considerably. In the questionnaire when asked if they thought the discussion about the learning intentions and success criteria before the lessons worthwhile, pupils emphasised how it served a dual purpose. Firstly, they felt that they knew what the purpose of the lesson was before entering the hall and, secondly, it eliminated time wasting as they could get started on the activities straight away. One pupil commented how discussing what they were going to learn was "good because it didn't waste 10 or 15 minutes of your PE time discussing it in the hall and you knew what to do before you went in". The issue of more effective use of time was also echoed in a study by Collins & O'Leary (2009) on AfL in Art. Another pupil emphasized the value of the discussions as he felt that it gave them the opportunity to discuss the key components involved in each balance and that demonstrations could further highlight the success criteria for each task.

Key Theme #4: *Heightened Awareness of Learning in PE*

Data from the pupil questionnaires highlighted clearly that the pre-lesson discussion on learning intentions/success criteria was helpful in focusing pupils' attention on the key learning in each lesson. One child described how he found these discussions helpful because he knew everything he needed to know about the skill before he entered the hall whereas prior to that he had noted "we hadn't a clue of why we weren't getting it right". The general opinion among the majority of pupils was that they had a better understanding of what qualities their performances must have in order to achieve success on a particular skill. For example, they noted that by being aware in advance about the elements that must be incorporated into a forward roll, they became more conscious of the techniques and movements that must be applied in order to achieve success in performing the skill. These findings support the assertion by the NCCA (2008b) that AfL in the classroom really makes teaching and learning clearer, and when students have this clear sense of where they are going their motivation increases.

Key Theme #5: *Improved Self-Assessment*
The use of video recording to capture the execution of skills proved to be very helpful throughout the study. It allowed pupils to identify the areas of each skill that they and their peers needed to improve upon. For example, when watching the video of the lesson on the forward roll, some pupils noted that dropping an arm on the actual roll was a problem. Some even noted the difficulties associated with not having the correct starting position. In relation to balances the pupils were also able to highlight the success criteria by noting how a particular leg and starting position could result in the skill not being performed successfully. Body positioning was also highlighted as an area that required attention and in diary reflections on subsequent lessons, it was noted that pupil self awareness about their own learning and that of their peers had improved a good deal. The teacher noted "children observed sequences and provided each other with accurate and useful feedback, pointing out how they felt balances and rolls could be improved". Questionnaire data suggested strongly that while pupils did not always use the term "success criteria", they had begun to focus their attention on their own learning. Half of the pupils (13) who completed the questionnaires were able to identify key things they would look out for when judging their own performance.

Key Theme #6: *Increased Awareness of Peer Learning*
Martin et al. (2002) discuss the use of assessment activities "as a vehicle to promote cooperation among classmates and recommend that teachers encourage their students to help one another" (p.19). It is good to note, therefore, that one of the key findings of this research was the increased awareness pupils seemed to have, not only of their own achievements in PE, but also the achievements of their peers. A number of pupils noted that what would once have caused embarrassment or annoyance had now become an increased appreciation of how feedback received from their peers could be helpful to them. For example, one pupil noted how he had rectified problems with his forward roll by watching the video of himself and listening to advice about his hand position from one of his peers. Another pupil noted that following feedback from a peer, he had come to realise, that in the horizontal balance he was not keeping his arms straight and so was falling down.

IMPLICATIONS AND RECOMMENDATIONS:

The concept of assessment as being integral to teaching and learning in PE is one that has not been universally applied in schools and one that has been under utilised as a research topic. The study described was conducted to investigate if use of shared learning intentions and success criteria, feedback and self-assessment would lead to more effective assessment and, as a consequence, more positive outcomes for teaching and learning in PE. The study findings suggest that AfL in PE has the potential to improve teaching and learning in the area. While this was a small-scale study conducted with just one class over a short period of time, changes were recorded in terms of pupils' attitudes and achievements. The AfL strategies lead not just to a better learning environment for PE but resulted in pupils being more positively disposed to both PE and assessment. There is also evidence in the study to suggest that, as in other literature on assessment, AfL works best when pupils are actively involved in it.

Findings in this study suggest that the use of shared learning intentions and success criteria promote self-assessment and a change in attitudes towards PE as pupils begin to realise that not only can they perform well in PE, but that they can also identify aspects needing improvement. The study demonstrates that AfL can be used to provide pupils with more focused feedback and be used to promote positive learning experiences even in a context where pupils may not be well disposed to it. While further research needs to be done, it is encouraging to know that by sharing learning intentions and success criteria with pupils teachers can create a more enjoyable, focused, and rewarding experience for their pupils. They can foster the skills of self and peer-assessment and take teaching and learning in PE to a new and more satisfying level.

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