An Examination of the Relationship between Participation in Extra-Curricular Physical Activity and the Psychological Well-Being of Adolescent Males from Disadvantaged Communities.

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Honesty Statement

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of M.Sc. is entirely my own work, that I have exercised reasonable care to ensure that the work is original, and does not, to the best of my knowledge, breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Abbreviations and Acronyms

CDC -	Centres for Disease Control and Prevention
CDVEC -	City of Dublin Vocational Education Committee
CSO -	Central Statistics Office
DEIS -	Delivering Equality of Opportunity in Schools
DES -	Department of Education and Science
ECPA -	Extra Curricular Physical Activity
ESRI -	Economic and Social Research Institute
ESRI -	Economic and Social Research Institute
FPE -	Fun of Physical Exertion
HBSC -	Health Behaviours of School-Aged Children Survey
JCPE -	Junior Cycle Physical Education
LGS -	Liking of Games and Sports
LVE-	Liking of Vigorous Exercise
MVPA -	Moderate-Vigorous Physical Activity
OECD -	Organisation for Economic Co-operation and Development
PA -	Physical Activity
PE -	Physical Education
PPC -	Perceived Physical Competence
PSW -	Perceived Self-Worth
PWB -	Psychological Well-Being
UK -	United Kingdom
US -	United States
WHO -	World Health Organisation
YPAP -	Youth Physical Activity Promotion Model

Peer Reviewed Abstracts

Belton, S.J.; Prior, P. (2010). Do we need extra-curricular physical activities in schools? PE PAYS. A shared vision for physical education, physical activity and youth sport, University of Limerick, Limerick, Ireland. (Oral Presentation, Appendix A).

Woods, C.B.; Prior, P.; Belton, SJ. (2013). The relationship between participation in extra-curricular physical activity and the psychological well-being of adolescent males. PE PAYS Research Forum (Youth Sport), Dublin City University, Dublin, Ireland. (Poster Presentation, Appendix B).

Abstract

Extra-curricular physical activity (ECPA) has an important role to play in post-primary schools. The main aim of this study was to examine participation levels of adolescent males (aged 12-15 years) from disadvantaged communities in ECPA and to investigate the impact on the psychological well-being of those who regularly participated. The main psychological areas to be investigated were physical self-worth, perceived physical competence and enjoyment of physical activity (PA). The study also looked to identify barriers to participation in ECPA.

Data were generated using self-report questionnaires, activity monitoring devices (pedometers) and focus group discussions. A longitudinal approach was adopted for this study with data being collected at Autumn, Winter and Summer during the academic year 2008/2009. Junior cycle students (N=174, male, 12-15 years of age, mean age 13.59 $\pm$ .91) from four City of Dublin Vocational Education Committee (CDVEC) schools participated in the study. Overall, N=174 students completed questionnaires, N=146 students recorded pedometer step counts, and N=43 students were involved in focus group discussions.

Only 14% of students met Department of Health and Children (DOHC, 2009) guidelines of $\geq$ 60 minutes MVPA daily. Over the academic year, the average daily step count was 11,891 (SD = $\pm$ 3,384) and the average number of days per week that students achieved $\geq$ 60 minutes MVPA was 4.98 (SD = $\pm$ 1.21). In terms of ECPA participation, 43% of students reported to 'regularly' (2 or more times weekly) participate in ECPA, 41% reported to 'sometimes' participate (once a week) and 16% reported 'never' participating in ECPA. As the rate of ECPA participation got higher, so did the average daily step count and the number of days $\geq$ 60 minutes MVPA per week.

The students who reported to either ‘sometimes’ or ‘regularly’ participate in ECPA, scored higher on all psychological well-being sub-scales than the students who reported ‘never’ participating in ECPA. An example of this can be seen under perceived physical competence where regular ECPA participants year-long average score was 23.49 (2.36), compared to students who never participated in ECPA who had a score of 14.88 (3.35), $F(2,167)=71.0$, $p<0.01$.

The focus groups with students, who regularly participated in ECPA, revealed that their main motivations for participation were enjoyment, being with friends and to improve their self-esteem, fitness and skills. These students also recognised the value of participation in ECPA, commenting on how it helped improve attendance and made school more appealing for them. In comparison, the students who never participated in ECPA suggested a lack of perceived competence and peer rejection were their main reasons for non-engagement. These students however, acknowledged the value of ECPA for its regular participants, namely building their confidence and making friends. Strategies suggested by the non-participants that might encourage participation included more positive support from significant others including peers, parents and teachers.

The main recommendation from this study is that ECPA in post-primary schools is a potential untapped resource for increasing minutes of PA in adolescent males. The present study has shown that ECPA participation can also have a positive effect on the psychological well-being of adolescent males, in particular, perceived competence, physical self-worth and enjoyment of PA. Future research should repeat this study with a same age female sample and should examine in greater detail, possibly through direct observation, the role of significant others (parents, peers, PE teachers) in the promotion of ECPA participation for adolescents.

Chapter One

1.0 Introduction

1.1 Physical Activity and Adolescents

Physical activity (PA) is defined as any bodily movement that is produced by the skeletal muscle and that increases energy expenditure (Casperson, *et al*., 1985). The World Health Organisation (WHO, 2010) refers to PA as all movements in everyday life, including work, recreation, exercise, and sporting activities. According to the Department of Health and Children (DOHC, 2009), physical activities for young people include walking, cycling, swimming, gardening, and participating in physical education (PE) classes, and the key to getting and staying healthy is regular PA. Woods and colleagues (2010) suggest that childhood and youth provides a real opportunity to influence attitudes and participation rates positively towards PA. According to Smith and Biddle (2008), there are five main characteristics that make up PA. They are frequency, intensity, time, type and domain.

- Frequency is the number of times that PA is performed within a certain period of time.
- Intensity is the physiological response to PA (amount of effort made)
- Time is the amount of time that an activity is performed
- Type is the particular activity being performed
- Domain is the setting in which the activity occurs e.g. at school, sports club.

Physical Activity Recommendations

The Department of Health and Children (DOHC, 2009) PA guidelines for Irish adolescents' are in line with the World Health Organisation (WHO, 2010) recommendations that young people should participate in moderate to vigorous physical activity (MVPA) for at least 60 minutes every day ($\geq$ 60 minutes MVPA daily). These guidelines are consistent with those in the US, Australia and across all member states of the European Union. Moderate activity is referred to as activity that raises the heart rate above normal and breathing is harder than normal, while vigorous activity refers to activity that raises the heart rate to much faster than normal and breathing is much harder than normal (DOHC, 2009). It is suggested that for children

and youth (aged 5-17 years) their main activity is aerobic (WHO, 2010). Adolescents' should also be doing muscle strengthening, flexibility and bone strengthening exercises three times a week and PA should be enjoyable (DOHC, 2009). According to the US Physical Activity Guidelines Advisory Committee (2008), for those children and adolescent's who meet the recommendation of ≥ 60 minutes MVPA daily, there is strong evidence of better cardio-respiratory and muscular fitness, stronger bones, better cardiovascular and metabolic health and a healthier fat composition. They also highlight some evidence of reduced symptoms of anxiety and depression. The recommended amount of time allocated to PE in post-primary schools in Ireland is 120 minutes per week (Department of Education and Science, 2003). In terms of physical steps taken daily, Tudor-Locke and colleagues (2004) established that to achieve health benefits, the average age and gender specific pedometer cut-points should be 12,000 steps daily for girls and 15,000 steps daily for boys (aged 6-12 years). No recommendations for adolescent daily step counts were given, however, they did suggest that the likelihood was for a decrease in the average daily step count with increasing age in adolescence.

Levels of Physical Activity among Irish Adolescents

The 'Take Part' study (Woods *et al.,* 2004) indicated low levels of PA among Irish adolescents (aged 15-17 years) with only 35% of students meeting the recommended ≥ 60 minutes of MVPA 4 or more days per week (the recommended amount of PA for this age group at that time). Males made up 42% of this total and the study also pointed to a decrease in PA levels with increasing age in adolescence. The 'Health Behaviours of School Aged Children' study (HBSC, Ireland, 2006) found that by 15 years of age, almost nine out of ten females and seven out of ten males did not achieve the recommended level of ≥ 60 minutes MVPA 4 or more times per week (Nic Gabhainn *et al.,* 2007). The study also highlighted a decrease in PA levels with increasing age. The 'Children's Sport Participation and Physical Activity' study (CSPPA, Woods *et al*., 2010) found that only 12% of Irish post-primary students met the Department of Health and Children (2009) PA recommendations (≥ 60 minutes of MVPA daily). The findings showed that 92% of students were not receiving the recommended 120 minutes per week of PE (DES, 2003). The study also indicated a drop in PA levels as the age of the students increased (Woods *et al.,* 2010). Fahey

and colleagues (2005) suggested that second year to sixth year students received, on average, 69 minutes per week of PE. They also found that one in five students never participated in ECPA in school. These findings over the last ten years indicate a need for more in-depth analysis of opportunities to be physically active, such as ECPA, and the potential health benefits from them, given the lack of emphasis on PE in schools and a failure to adhere to the recommended 120 minutes of PE per week (Department of Education and Science, DES, 2003).

Extra-Curricular Physical Activity (ECPA) in Post-Primary Schools

ECPA is frequently presented as a fundamental link between curricular physical education (PE) and participation in sport and physical activity (PA) and is seen as significant in laying the foundations for lifelong participation in sport and PA among young people (Bass and Cale, 1999). However, Penney and Harris (1997) suggested that ECPA provided limited opportunities to only a minority of pupils who possessed sporting ability, at the expense of the majority of students with limited sporting ability. ECPA is seen as a potentially good medium for enhancing pupil's health, yet researchers have very little idea of how much ECPA actually contributes to students' health. (Curtner-Smith *et al*, 2007). There is also a dearth of information regarding the possible association between ECPA participation and the psychological well-being of adolescents. In Ireland, little is known about the amount of ECPA on offer in post-primary schools, the content of ECPA, the levels of participation in it or the possible health benefits to be gained from ECPA participation. The lack of ECPA focussed studies in the literature highlights how the whole area of ECPA is under researched in this country. According to Fahey and colleagues (2005), ECPA in Irish schools can be a focus of school life, can give a school character and therefore, needs to be brought much closer to the attention of research and policy development on adolescent's PA.

Levels of ECPA Participation in Irish Post-Primary Schools

In Ireland, the Economic and Social Research Institute study (ESRI, Fahey *et al*., 2005) 'School Children and Sport in Ireland' found that far higher frequencies of post-primary students (male and female) were participating in ECPA compared to

Physical Education (PE). The number of students participating in ECPA four or more days a week was 22%, two or three days a week was 30%, with 18% participating once a week. Male students were found to participate more often in ECPA than females, with 29% of females unlikely to take part in ECPA at all, compared to 16% of males. Fahey and colleagues (2005) also reported a decrease in ECPA participation, as the students got older. The 'Children's Sport Participation and Physical Activity' study CSPPA study (Woods *et al*., 2010) found that 31% of post-primary students were participating in ECPA four or more days a week, 26% were participating two or three days a week and 16% were participating once a week. The amount of students that reported to never participate in ECPA was 16%. Again, males were found to be more regularly involved in ECPA than females and similar to the ESRI study (Fahey *et al*, 2005), ECPA participation levels decreased with an increase in age of the students; the decrease was more prevalent in females. The CSPPA study reported that social class, area of residence and the designation of a school as disadvantaged, did not influence participation rates in ECPA. However, it was noted in the CSPPA study (Woods *et al*., 2010) that post-primary students from a higher social class were more involved in community-based sport than those from a lower social class.

1.2 Justification of the Study

There is a need to investigate the potential, positive impact of regular ECPA participation on the psychological well-being of adolescent males in post-primary schools. The importance, if any, of this form of activity to males from disadvantaged communities, their motivations and barriers to participation and potential strategies to encourage uptake and sustainability of ECPA amongst this target group need to be examined. There has been little longitudinal research in this area and it is particularly under-researched in Ireland, and amongst hard to reach, disadvantaged groups. This research will provide a unique opportunity to investigate ECPA in disadvantaged post-primary schools over the period of a single academic year. This study is advised by Welk's (1999) Youth Physical Activity Promotion model (YPAP). This model, which will be discussed in detail in chapter 2, focuses on explaining youth engagement in, or avoidance of, PA. Its four main explanatory mechanisms are an understanding of one's i) enabling ii) predisposing and iii) reinforcing factors and iv) personal demographics in relation to PA behaviour.

1.3 Study Aims and Objectives

The aims of this study are to examine ECPA participation amongst Irish post-primary males (aged 12-15 years) from disadvantaged backgrounds, to evaluate the potential impact of regular ECPA participation on their psychological well-being and to investigate the motivations or barriers to participation. The specific objectives are:

1. To explore the ECPA participation levels of Irish adolescent males.

2. To assess the PA levels of adolescent males in terms of Habitual Physical Activity (HPA, $\geq$ 60 minutes MVPA daily) and daily pedometer step count

3. To explore the possibility of regular ECPA participation being linked with positive psychological well-being, as is defined by the Youth Physical Activity Promotion model (Welk, 1999). It is hypothesised that perceived physical competence (PPC), physical self-worth (PSW) and enjoyment of PA will improve with an increase in ECPA participation levels.

4. To understand the motivations and barriers to ECPA for students.

Chapter Two

2.0 Literature Review

2.1 Introduction

The purpose of this chapter is to review the literature on physical activity (PA) and adolescents. Section 1 will outline the different types of PA, the current guidelines on PA for adolescents, PA prevalence levels of Irish adolescents and the physical benefits associated with PA for this population. Section 2 will examine the psychosocial benefits associated with PA and explore the correlates and measurement of PA in youth. The final section will review, in detail, the different types of PA in adolescence.

This literature review is focused mainly on post-primary school students (aged 12-18 years). In Ireland, post-primary school (second level education) generally starts at the age of 12 and consists of a 3-year 'junior cycle', followed by a 2 or 3 year 'senior cycle'. The junior cycle consists of years 1, 2 and 3. The typical age range of students in the junior cycle is 12-15 years of age. The senior cycle is typically a 2-year programme, however, an optional 'transition year' may be chosen in schools where it is offered. This is a 1-year programme, which acts as a bridge between the junior and senior cycle. The typical age range of students in the senior cycle is 15-18 years of age (Department of Education and Skills, 2009). This age range, commonly referred to as adolescence, is a peak time of leisure needs (Hendry *et al.*, 1993). It is the transition from childhood to adulthood and is one of the most important and critical periods of development in the life cycle during which physical, social and emotional changes occur (Fox, 1997; Harter, 1999). Yet, research suggests it is a period characterised by a decline in PA (Pratt *et al.*, 1999; Trost *et al.*, 1999). As such, it makes an ideal time to study how PA habits change, and how participation in different types of PA, in this case extra-curricular physical activity (ECPA), influences the health and well-being of adolescents. For the purpose of clarity, the main types of PA that youth participate in are introduced below. These include physical education (PE) and extra-curricular physical activity (ECPA) in school, community based PA and active travel to and from school. A full review of these types of PA is presented at the end of the chapter.

2.2 Types of Physical Activity

There are many different types of PA that adolescents can participate in to meet the recommended PA guidelines of ≥ 60 minutes MVPA daily ((DOHC, 2009). Opportunities for adolescents' in Ireland to be physically active include physical education (PE) and extra-curricular physical activity (ECPA) within the school setting, active travel to and from school, and PA within sports clubs in the community (Woods *et al.,* 2010).

Physical Education (PE)

PE in schools is seen as an important way of encouraging young people to be physically active, which can promote their health and well-being (Cale, 2000; Blanksby and Whipp, 2004). The current PE syllabus in Ireland states that *''PE recognises the physical, mental, emotional and social dimensions of human movement and emphasises the contribution of physical activity in the promotion of individual and group well-being''* (Department of Health and Science, 2003:4). The PE curriculum in Irish post-primary schools is made up of 7 areas of study. These include adventure activities, aquatics, athletics, dance, games, gymnastics and health related activity. The curriculum is developed on the basis of a time allocation of two hours per week. PE is compulsory for students within the junior cycle (aged 12-15 years), however, it is optional for students at senior cycle level (aged 16-18 years). PE is a non-examinable school subject in Ireland. The potential of PE to affect young people's PA is apparent from 2 standpoints. First, high-quality, active PE can contribute to recommended PA levels for youth. Second, positive PE experiences may be key in the promotion of PA beyond the curriculum and outside of school (Cavill *et al.,* 2001; Corbin and Pangrazi, 2003).

Extra-Curricular Physical Activity (ECPA)

ECPA is usually associated with PE in schools and it is often referred to as extra-curricular PE, particularly in the UK. Extra-curricular PE in schools has been defined as *"the provision of activities outside of the formal PE curriculum, most often after school and at lunch times, but also in some schools, at weekends and/or before school"* (Penney and Harris, 1997:42). Extra-curricular physical activity (ECPA) will be used in this document as the term to describe any physical activities participated in

by students within the school setting, but outside of the formal curriculum. They are organised by the school, by volunteers or by local clubs coming into the school and they normally take place at lunchtimes, before or after school. ECPA is acknowledged as an essential part of young peoples' PA experience in school (Fahey *et al.*, 2005). Across the literature, varying terms are used to describe ECPA, such as 'extra-curricular sport', 'extra-curricular activities' and the aforementioned 'extra-curricular PE'. For the purpose of this study, ECPA is used as an umbrella phrase and will reflect all of these terms.

Club Sport and PA Outside of School

Club sport and PA outside of school are important in helping young people achieve the WHO (2010) and DOHC (2009) recommendation of $\geq$ 60 minutes MVPA daily. According to Lunn and colleagues (2007), clubs that are run outside of the school system are an important part of the institutional structure of sports participation in Ireland. The European Heart Network document on 'Children and Young People – The Importance of Physical Activity' (2001), states that after-school and weekends are key times associated with PA for young people.

Active Travel to and from School

Active travel is walking or cycling all or part of the journey to a destination, whereas, inactive travel is using motorised transport e.g. car or bus (Smarter Travel: A Sustainable Transport Future, Department of Transport, 2009). Murtagh and Murphy (2011) suggest that active travel to and from school may represent a worthwhile strategy for improving children's PA levels. The WHO (2010) states that walking can have significant benefits to health and is the nearest activity to perfect exercise. The National Heart Alliance, Ireland (2010) referred the daily trip to school as the most universal opportunity for regular PA through cycling or walking and a great way of getting young people physically active.

Alongside club sport and PA outside of school, there is a real opportunity for adolescents to be physically active in school, including active travel to and from school. These opportunities need to be highlighted to increase the PA levels of adolescent males in post-primary schools.

2.3 The Importance of ECPA

The school environment is an important setting for children and adolescents to take part in PA through PE, ECPA and participation during lunchtime or after school (WHO, 2003). ECPA is not part of the formal curriculum in post-primary schools, yet it can provide an excellent opportunity for adolescents to be physically active within the school setting. Due to the amount of time adolescents spend in school during the academic year, post-primary schools can play an important role in potentially increasing the PA levels of adolescents. However, despite the potential, the impact of ECPA participation on PA levels in adolescents has not been studied extensively in research (Pate *et al*., 2006).

In many schools, ECPA is actually provided more often than PE, highlighting the importance of ECPA as an opportunity for students to be physically active. The official weekly PE recommendation in Irish post-primary schools (Department of Education and Science, 2003) is that of at least two hours per student. Evidence would suggest that many schools do not meet these recommendations and studies have shown that students' participation in PE drops significantly in the senior cycle (McPhail and Halbert, 2005; Woods *et al*., 2010). For this reason, the availability of ECPA in post-primary schools is crucial. PE and ECPA in post-primary schools are often linked by the physical activities that are provided. Students' views on ECPA and its content need to be investigated in order to possibly increase motivation to be physically active within the school setting. In order to gauge the honest views of students on ECPA in school, more qualitative research needs to be carried out. An understanding of the factors that influence adolescent's participation in PA is required. Focus group discussions should provide students' with a window of opportunity to portray their views on PA in school, including what motivates them to participate or what prevents them from participating in ECPA. This current study provides that platform for junior cycle males (aged 12-15 years). The findings, if acted upon, could lead to a more positive environment created in post-primary schools around the area of PA for all students and could increase the motivation of more students to participate in ECPA on a more regular basis.

2.4 Health Benefits Associated with Adolescent PA

According to Inchley and colleagues (2011), the increasing recognition of the health benefits of PA in recent times has led to renewed efforts to promote active lifestyles among young people. Regular participation in PA for young people has been shown to enhance their physical, psychological, and social well-being (Biddle, Sallis and Cavill, 1998; European Heart Network, 2001; National Heart Alliance, 2010; WHO, 2010).

Physical Health Benefits

The WHO (2010) recommend PA to young people to assist in the development of a healthy cardiovascular and musculoskeletal system, as well as the development of neuromuscular awareness and to help maintain a healthy body weight. The direct relationship, however, between PA and health in young people is not exactly clear. This is somewhat linked to methodological problems, in terms of how it can be measured. It is also due to the main morbidities, particularly non-communicable diseases, which affect adults, but have not had long enough to become established in adolescents (Riddoch, 1998). According to Cale and Harris (2005), the evidence to suggest that PA in adolescence benefits them greatly in terms of physical health is inconsistent and makes the guidelines for PA in youth somewhat superficial. This suggests that further research, particularly longitudinal research, into this area is warranted. Twisk (2001) suggests that PA guidelines for children and adolescents are highly speculative and reports there is only marginal evidence that PA is beneficial for health during childhood and adolescence or that PA in youth is related to adult health status.

Weight control/Obesity management

One of the more widely recognised physical health benefits from PA participation both in the short term and the long term is weight control/obesity management (Chief Medical Officer, CMO, Department of Health, England, 2004; Strong *et al.*, 2005). Overweight and obesity in young people has been linked to psychosocial problems that may persist into adulthood (Edmunds *et al*., 2001). This manifests, for example, in obesity negatively effecting self-esteem in youth, the effects of which may last into adulthood (Fahey *et al*., 2005; Hallal, 2006; Department of health and ageing, Australian Government, 2009). Overweight and obesity in young people is one of the

major public health challenges of the 21st century (WHO, 2010). Obesity can be referred to as a symptom of an imbalance between calories taken in as food and calories that are expended through PA (European Heart Network, 2001). Although physical inactivity and consequent low energy expenditure is not the sole cause of obesity, there is a correlation between sedentary behaviours and levels of overweight and obesity (European Heart Network, 2001). Some of the problems that can be caused by overweight and obesity in young people include the onset of Type 2 diabetes, cardiovascular problems, lower levels of physical fitness and a lower quality of life (CDC, 2011; CMO, England, 2004; National Heart Alliance, 2010; WHO, 2010). PA is recognised as key to effective management of overweight and obesity problems (Strong *et al.,* 2005; Department of Health and Children, Ireland, 2005). The Department of Health and Children in Ireland (DOHC, 2009) suggest that to be a healthy weight, regular PA and a healthy diet is essential, which ensures a balance between energy received from food eaten and the amount of energy used.

According to Ogden and colleagues (2008), obesity levels among American adolescents (aged 12-19 years) more than tripled in the last 30 years, increasing from 5% to 17.6%. In Australia, a National Health Survey (2007/2008) found that 24.9% of children (5-17 years) were overweight or obese (Department of Health and Ageing, Australian Government, 2009). In 2011, the National Health Service (NHS), England, produced a report on 'Statistics on Obesity, Physical Activity and Diet in England'. The report used figures on overweight and obesity in youth from a Health Survey for England (2009). This survey included a total of N=7,521 children and adolescents (aged 2-15 years). The report stated that three in ten males and females (aged 2-15 years) were classified as overweight or obese. The report also concluded that 16% of males and 15% of females (aged 2-15 years) were classified as obese, an increase from 11% and 12% respectively from 1995**.**

According to the Department of Health and Children, Ireland (2005), obesity is a major public health concern in this country and that the less active people are, the more at risk of being overweight they are. The National Teens Food Survey (2008) in Ireland reported that teenage obesity had significantly increased since 1990. The increase had gone from 1% to 8% in males and 3% to 6% in females. It was also stated that one in five teenagers were overweight or obese (Irish Universities Nutrition

Alliance, 2008). The National Taskforce on Obesity estimated that 300,000 children in Ireland were overweight and obese and predicted that this figure would increase by 10,000 annually (Department of Health and Children, 2005). The 'Growing Up in Ireland' study has highlighted more worrying evidence on the state of the nations children (Layte and McCrory, 2011). This document reports on a sample of N=8,568 primary school pupils during 2007 and 2008. All the males and females involved were nine years of age at the time of the study. From the data collected, 19% of the children were classified as overweight and 7% as obese. Thirty-three percent of females and 22% of males were classified as overweight or obese. The report suggests that overweight or obese children are likely to become overweight or obese adults (Layte and McCrory, 2011).

Fahey and colleagues (2005) carried out research for the Economic and Social Research Institute (ESRI) in conjunction with the Irish Sports Council. This 'School Children and Sport in Ireland' report collected information from post-primary school students (N= 3,527), across eighty schools. The figures showed that approximately 1 in 5 post-primary students were either obese or overweight. In the CSPPA study (Woods *et al.*, 2010) a sub-sample (N=1,215) of the overall cohort of students completed physical health measures. Three-quarters of the students had a healthy Body Mass Index (BMI), 18% were found to be overweight and 4% were obese.

Mental and Social Health Benefits

The psychosocial benefits to young people from involvement in PA have been well documented (CMO, 2004; Department of Health and Children, Ireland, 2009; WHO, 2010). The CMO (2004) report suggested that participation in PA by young people could improve their psychological well-being and provide opportunities to develop social skills. The WHO (2010) also emphasised the importance of PA participation for them, stating that PA can benefit their social development. They suggest that confidence levels can be increased and that social interaction and integration can flourish.

In 2001, the European Heart Health Initiative published 'Children and Young People – The Importance of Physical Activity'. This paper recognised the importance of PA as a normal part of growing up and identified the importance of the links between

physical activity and psychological health. Tortolero and colleagues (2000) reviewed forty-eight articles regarding PA and young people and found strong to moderate support for the positive relationship between PA in youth and many psychological variables. In particular, they demonstrated evidence for a positive association between PA in youth and psychological variables such as self-esteem and perceived physical competence.

Biddle and colleagues (2000) referred to self-esteem as the awareness of good possessed by the self. According to Whitehead (1995), self-esteem is associated with self-worth. Biddle and Mutrie (2001) suggested that self-esteem is the single most important measure of psychological well-being. They suggested that those who recommend participation in exercise and sport often claim the enhancement of self-esteem, which is in line with benefits associated with PA in youth today. Calfas and Taylor (1994) reviewed the literature on the effects of PA on psychological variables in adolescents. They found moderate evidence to suggest that PA was related to higher self-esteem levels in adolescents. Fox (2000) found that higher levels of self-esteem could be achieved with higher levels of PA in youth. Altintas and Hulya Asci (2008) investigated the physical self-esteem of adolescents with regard to PA. Turkish adolescents (N=420 male/383 female, aged 11-14 years) completed The 'Children and Youth Self-Perception Profile' (Whitehead, 1995), a 36-item questionnaire, which can be used to ascertain physical perception in different areas of self-worth. They also completed a weekly activity checklist, which reported their PA for the whole week**.** The investigation found that physically active males and females scored higher on almost all subscales of physical self-esteem than their less active counterparts.

A more recent study examined Scottish adolescents' physical self-perceptions and their association with PA using a longitudinal perspective (Inchely *et al.*, 2011). Scottish adolescents (N=641, aged 11-15 years/N=49% males) across four school years completed self-report questionnaires. Self-esteem was assessed using a ten-item scale based on the Rosenberg self-esteem scale (West and Sweeting, 1997). A four point Likert scale was used and responses ranged from 'agree a lot' to 'disagree a lot'. Males reported higher levels of self-esteem than females in all years of the study. This study suggests the importance of physical self-perceptions in terms of PA participation among adolescent males and females. The study suggests that future

research should aim to identify those physical activities, which may be most likely to foster positive self-perceptions during the adolescent years. In summary, several researchers have highlighted the positive effect on psychological well-being and self-esteem from PA in childhood and adolescence (Crocker *et al.*, 2000; European Heart Network, 2001; Green and Hardman, 2005; Hallal *et al.*, 2006; Kremer *et al.*, 1997).

Inchley and colleagues (2011) refer to physical self-worth as a component of global self-esteem, which relates specifically to perceptions of self in the physical domain. The study, referred to above, measured physical self-worth in Scottish adolescents (aged 11-15) using the physical self-worth subscale of the Child and Youth Physical Self-Perception Profile (Whitehead, 1995). Physical self-worth was associated with PA in males and females and males reported higher levels of physical self-worth than females in all years of the study. In 1999, the Institute of Youth Sport carried out a study across 49 secondary schools in England (N=2510, aged 11-15 years, 1178 male/1332 female). The objective was to identify possible links between PA and psychological well-being. All participants completed a battery of self-report questionnaires. Results showed that there were two distinct groups. Group 1 was categorised as the highly physically active students (N=13%) who scored highest on the physical self-worth levels. This particular group was made up of more males (N=66%) than females (N=33%). Group 2 was categorised as the lowly physically active group (N=14%) scored low on physical self-worth levels. This particular group was made up of more females (N=67%) than males (N=33%) and were, on average, older. The results from this study showed that regular participation in health enhancing PA for youth is beneficial to their physical self-worth and may protect it, whereas a lack of PA may be damaging to it.

Perceived competence has been referred to as the perception of control over an outcome and is associated with the mastery of a desired behaviour (Biddle and Mutrie, 2001). The motivation literature emphasises the importance of perceived competence in an individual's decision to engage in and maintain involvement in a PA (Bandura, 1997; Fox, 2000; Horn and Harris, 2002). McNamara and colleagues (2011) viewed perceived competence as the drive to keep persisting in the face of difficulty. It is also believed that these variables can grow in importance as individual's progress further in their PA. A study by Telama and colleagues (2005)

looked at the relationship between lifestyle and PA among Belgian (N=1439) and Finnish (N=789) adolescents (aged 12-15 years, N=1142 male/1086 female) using self-report questionnaires. The most active adolescents had the highest mean score in perceived physical competence and task orientation and had a positive attitude towards school and PE. The most inactive groups were found to have low levels of perceived physical competence, a negative attitude towards PE and they reported low perceptions of the importance of being good at sport. These results emphasise that perceived physical competence and perceived importance of being fit or good at sports were among the main correlates of adolescents' PA. There is a need for future research to further develop our understanding of the relationship between perceived physical competence and different types of PA that adolescents choose to engage in.

Inchely and colleagues (2011) measured Scottish adolescents' perceived sports competence using the Physical Ability Subscale of the Self-Description Questionnaire (Marsh, 1990). The study found that perceived competence was significantly correlated with PA for males and females and that males reported higher levels of perceived competence than females in all years of the study. The study suggests that future research should aim to identify those physical activities, which may be most likely to foster positive self-perceptions during the adolescent years (Inchely *et al.*, 2011).

PA in youth has been shown to not only benefit the mental well-being of children and adolescents, but it can also be beneficial in alleviating mental ill-health. Calfas and Taylor (1994) reviewed literature on the effects of PA on psychological variables in adolescents. They found moderate evidence to suggest that PA was related to lower stress levels. A study by Motl (2004) showed that PA was inversely related to depression symptoms in early adolescence. A review of 48 articles regarding PA and young people that found that a positive relationship between PA in youth and many psychological variables, also indicated a negative relationship to depression and stress (Tortolero *et al.*, 2000). These studies have led many health organisations and Government Health Departments, when promoting PA in youth, to refer to the control and reduction of anxiety, stress and depression symptoms in young people from being physically active (European Heart Network, 2001; Department of Health and Human Services, US, 2008; WHO, 2010). The Chief Medical Officer (CMO) reported that

children and adolescents who have low PA levels have more symptoms of distress than their more active counterparts (Department of Health, England, 2004).

Participation in PA can also benefit the social development of adolescents by raising their confidence levels and by improving their social interaction and integration (DOH, England, 2004; WHO, 2010). Berger and colleagues (2007) suggest that parents, siblings and friends typically comprise the social support system for adolescent participation in PA and that adolescents aspire to do what peers do, have similar desires and possess the same values. Being with friends (Department of Health and Human Services, US, 2008) is one of the main motives why children and adolescents engage in PA. Enjoyment of PA has also been linked in research to the social aspect of PA for young people (McCarthy and Jones, 2007; Tannehill *et al*., 2011). The links between parental support and healthy adolescent behaviours have been extensively studied and there are positive relationships between parental support and adolescent involvement in PA (Sallis, Prochaska and Taylor, 2000).

A report by the Women's Sport and Fitness Foundation (WSFF, 2011) provided an insight to the attitudes of primary and secondary school students (N=1500) to sport and PA in England. The survey, carried out by the Institute of Youth Sport at Loughborough University from 2009 to 2011, was questionnaire based and included focus group discussions with students. The report found that for females, one of the most enjoyable and motivating aspects of sport and PA is the social aspect. The focus groups showed that females were very influenced by the behaviour of their friends. They felt that if their friends were active, it would encourage them more to take part and make them feel more comfortable participating in sport and PA. This was even more evident with older females. Overall, 57% of females reported being active because their friends were and the same number agreed that females drop out of sport and PA because their friends do. Encouragement and social involvement and friendships have been reported among older children (aged > 12 years), which indicated that affiliation with peers in youth sport and PA is an important source of enjoyment for children. Older children are, however, more strongly influenced by peers in sport, reflecting a developmental shift in enjoyment perceptions (Allen, 2003).

A study by Wenthe and colleagues (2009) in the US investigated the relationship between predisposing, reinforcing and enabling factors from the Youth physical Activity Promotion model (YPAP) and moderate to vigorous Physical Activity (MVPA). Family and peer support were two of the main factors examined. The participants (N= 205 adolescents, 102 male) completed a self-report questionnaire (Physical Activity Questionnaire for Adolescents) and a questionnaire based on the YPAP model. The participants also wore an activity monitor (accelerometer) for five consecutive days. The study found that peer support demonstrated a significant correlation with the MVPA of the male participants. Of all the factors looked at, family support demonstrated the strongest and most consistent relationship with male MVPA. The study suggested that family support has the potential to positively alter the PA behaviour of adolescents.

A longitudinal study carried out by DiLorenzo and colleagues (1998) examined the determinants of exercise among children (Phase 1, N=242, N=121 males, mean age 11.2 years) and phase 2 (N=111, N=57 males, mean age 14 years). The study involved the participants completing a Physical Activity Questionnaire and being involved in interviews. The findings showed that peer influence was important for both males and females in terms of PA participation, yet more so for females as they got older. The most important predictor of PA participation found was enjoyment. Both peer and family support in the form of encouragement of PA were important to both males and females but became more so for females over time. Sabistion and Crocker (2008) examined the leisure time activity correlates of adolescents (N=857, aged 15-18 years) using questionnaires to assess social influence and PA. The study found that encouragement from significant others was associated with high sport values among youth. This can be related to PA. The study (Sabistion and Crocker, 2008) suggested that parent and peer influences should continue to be explored as sources of adolescent PA values. Smith and Biddle (2008) stated that parental support for their children's PA participation ranges from verbal encouragement to logistic support (providing transportation e.g. providing transportation, and creating a home environment conducive to PA behaviour. In Gustafson and Rhodes (2006) review, 19 studies investigated parental support and 18 of them showed a significant positive relationship with youth PA. The review also reported that the association was stronger in younger (< 12 years) than in older children (> 12 years). Brustad (1996)

suggested that parental encouragement of PA, not role modelling (activity level of parents), was significantly related to perceived competence and attraction to PA. Kimiecik (1998) also highlighted the links between parental beliefs (perception of the child's competence) and children's PA participation. The focus group discussions in the present study look at the type of parental influence affecting adolescent males ECPA participation in chapter 5.

Summary of section 2.4

It has been suggested by Riddoch and colleagues (2004) that the evidence for physical health benefits of PA in children and adolescent's is by no means strong and that the real goal of PA promotion in young people lies in the establishment of regular PA participation, which could persist throughout life, rather than the production of health outcomes. Overall, specific studies need to be carried out to clear up inconsistencies surrounding the physical health benefits to adolescents from being physically active. Longitudinal studies tracking adolescents and their PA participation into adulthood to investigate physical health benefits over a longer period would also be worthwhile. Reducing sedentary behaviour, as well as promoting PA, is the key to addressing the inactivity problem among Irish adolescents (Woods *et al.,* 2010). This study looks at the possibility of ECPA being an important contributor to PA levels in adolescent males (aged 12-15 years) over the duration of a full academic year.

This review of mental and social health benefits to adolescents from participation in PA has shown that participation is positively linked with both psychological well-being and positive social support. However, much of the research is cross-sectional (Inchely *et al*., 2011; WSFF, 2011) and quantitative (Wenthe *et al*., 2009; Institute of Youth Sport, 1999). This suggests a very short time frame, with a-priori hypothesis agreed before the research commences. There is a need to broaden our research learning through more longitudinal research, facilitating extensive use of qualitative research methods such as focus groups. The focus groups, used in some of the studies reviewed (McCarthy and Jones, 2007; Tannehill *et al*., 2011; WSFF, 2011) have given adolescents an opportunity to portray their attitude towards PA, in terms of benefits they derive from PA participation. This is potentially very important as the adolescent voice can allow exploration into the research challenge of preventing

dropout and sustaining long-term PA participation. This present study includes focus groups at three different stages over the course of an academic school year.

2.5 Prevalence of Physical Activity in Adolescents

Despite the widely acknowledged health benefits of PA participation for youth, research is showing that a large volume of children and adolescents across Europe and North America are not meeting the minimum recommended level of $\geq$ 60 minutes MVPA daily (Nic Gabhainn, 2010; Twisk, 2001; WHO, 2010). The WHO (2010) has stated that the decrease in PA begins in adolescence and continues throughout the adult years. Approximately, 600,000 deaths per year in Europe occur as a consequence of physical inactivity (WHO – European Region, 2006). More recent figures estimate that 1.9 million people worldwide die each year as a result of physical inactivity (WHO, 2010). The most concerning long-term consequences of inactivity in youth, is its persistence into adulthood (Department of Health and Children, Ireland, 2009;European Heart Network, 2001; Nic Gabhainn *et al.*, 2007; WHO, 2010).

A nationwide self-report survey was carried out by the Centres for Disease Control and Prevention (CDC) in the United States (Eaton *et al.*, 2009). This Youth Risk Behaviour Surveillance survey (YRBS) included a total of N=16,410 high school students (N=52% male) in grades nine to twelve (aged 14-19 years). The survey found that only 18% of students had participated in $\geq$ 60 minutes of MVPA per day on each of the previous seven days. Overall, 24% of males and 11% of females were physically active on each of the previous seven days. The number of students who participated in $\geq$ 60 minutes of MVPA on each of the previous seven days decreased as the age of the students increased (9^{th} grade – 21%, 10^{th} grade – 19%, 11^{th} grade – 17%, 12^{th} grade – 15%). This decrease was prevalent among males and females. The percentage of students who participated in $\geq$ 60 minutes of MVPA on five or more days in the previous seven was 37%. Overall, 45% of males and 27% of females participated in $\geq$ 60 minutes of MVPA on five or more days in the previous seven. The numbers decreased with increasing age (9^{th} grade – 39.7%, 10^{th} grade – 39.3%, 11^{th} grade – 36%, 12^{th} grade – 31%). Again, this was prevalent among males and females. The survey showed that 23% of students did not participate in $\geq$ 60 minutes of MVPA at least one day during the previous seven days. Overall, 29% of females

and 17% of males did not participate in at $\geq$ 60 minutes of MVPA at least one day in the previous seven days. The numbers here increase, as the students get older (9^{th} grade – 21%, 12^{th} grade – 25%). Once again, this is prevalent among males and females.

The 'Children and Young People – the Importance of Physical Activity' paper, published in the context of the European Heart Health Initiative, carried out a review of PA surveys of young people (aged 11-15 years) across Europe (European Heart Network, 2001). The review recognised that males were more active than females in all countries and in the majority of countries, PA levels decreased with increasing age. Findings from the 2009/2010 HBSC Europe survey showed that 23% of 11 year olds met the guidelines of $\geq$ 60 minutes MVPA daily (WHO, 2010), while only 15 % of 15 year olds met the guidelines (Currie *et al*., 2012). A decrease of PA in males and females occurred with increasing age and the decrease was more pronounced in females than in males.

The National Diet and Nutrition survey (Department of Health, England, 2000) of young people (N=2,672, aged 7-18 years) found that males (61%) and females (42%) were achieving the recommendation of $\geq$ 60 minutes moderate intensity PA daily. These proportions declined with increasing age. More recently, a 'Health Survey for England' (2008) used self-report and objective methods of PA measurement in children and adolescents. The self-report results showed that only 32% of males and 24% of females (N=7521, aged 2-15 years) were meeting the Chief Medical Officer's (CMO, 2004) recommendation of $\geq$ 60 minutes of moderate PA daily. The percentage of males (aged 12 years) meeting the recommended levels was 29%, decreasing to 27% at 13 years of age, 32% at 14 years of age and the same percentage again at 15 years of age. Females showed a more consistent pattern with age in relation to meeting the recommendations. The percentages went from 20% of 13 year olds to 12% of 14 year olds to 15% of 15 year olds. Objective measuring of PA was used with a sub-sample of participants (n=1707, aged 4-15 years) by way of accelerometers. The accelerometer data showed that a higher proportion of boys than girls were meeting the recommendations (33% and 21% respectively).

In Scotland, the 'Scottish Health Survey, 2009' (Ormstan *et al.*, 2010) interview based survey was carried out in households (N=9,000+) across the country. In total, N=2,607 children (aged 2-15 years) participated in the survey. The survey found that overall, males (75%) and females (68%) met the recommended amount of ≥ 60 minutes of moderate PA daily (Scottish Executive, 2003). Males showed a decrease in the numbers meeting the PA recommendations with age. Eighty percent of males (aged 5-12 years) met the recommended amount of PA, dropping to 70% of males (aged 13-15 years). Females meeting the recommended amount of ≥ 60 minutes moderate PA daily dropped significantly, from 79% (aged 8-10 years), 67% (aged 11-12 years) down to 41% (aged 13-15 years). The survey shows adolescent males being more physically active than adolescent females, and highlighted the drop in PA with increasing age (male and female). Both these surveys from England and Scotland were using the United Kingdom PA recommendations at that time (≥ 60 minutes moderate PA daily), as opposed to the current recommendation of ≥ 60 minutes MVPA daily. This may be a reason behind the relatively high percentages of students meeting the guidelines at that time. Inchely and colleagues (2011) examined Scottish adolescents' physical self-perceptions and their association with PA using a longitudinal perspective. A total of N=641 Scottish adolescents (aged 11-15 years) across 4 school years (2002-2006) completed self-report questionnaires. The results of the study showed that males were consistently more active than females in each year and there was a significant decrease in the proportion of active males and females over time.

From an Irish perspective, the 'Take Part' study (Woods *et al.,* 2004), which surveyed N=939 students (60% female/40% male) from the East Coast Area Health Board region of Ireland showed low levels of PA among young people (aged 15-17 years). The study found that 35% of students were meeting the recommended ≥ 60 minutes of MVPA 4 or more days per week (the recommended amount of PA for this age group at that time). For males, 42% met the recommended levels, while for females, only 30% met the recommended levels of PA. The study also reported that 15 and 16 year olds were more likely to meet the PA recommendations than the 17 year olds, indicating a decrease in PA with age.

The 'Health Behaviours of school aged children' study (HBSC, Ireland, 2006) found that over half of primary school age children (aged 4-12 years) in Ireland did not achieve the recommended level of ≥ 60 minutes MVPA daily (Nic Gabhainn *et al.*, 2007). The study reported that 27% of participants (aged 10-17 years) were engaged in ≥ 60 minutes MVPA daily over the last 7 days. The study found that by 15 years of age, almost nine out of ten females and seven out of ten males did not achieve the recommended level. A drop in PA levels with increasing age was highlighted. The young people who achieved ≥ 60 minutes MVPA 4 or more times per week ranged from 64% (aged 10-11 years), to 59% (aged 12-14 years) down to just 42% (aged 15-17 years). The decline in PA levels with increasing age was apparent among both genders, but it was particularly noticeable among females. The decrease among females who were active 4 or more times per week went from 58% (aged 10-11 years) through 51% (aged 12-14 years) to 28% (aged 15-17 years). The more recent HBSC, Ireland (2010) study found there has been little change in PA levels of children and adolescents since 2006 (Nic Gabhainn *et al.*, 2012). A total of N=16,060 participants (aged 10-17 years) completed self-report questionnaires from around Ireland. Overall, 25% of participants were engaged in ≥ 60 minutes MVPA daily over the last 7 days, while 51% were engaged in vigorous exercise ≥ 4 times per week compared to 53% in 2006. The children and adolescents who achieved 60 minutes per day MVPA ≥ 4 times per week ranged from 62% (aged 10-11 years), to 54% (aged 12-14 years) to 41% (aged 15-17 years). Again, this shows that the levels of PA among Irish children and adolescence have remained stable since 2006. The study also found that males were more active than females and PA levels decreased with increasing age. Older adolescents and those from a lower social class were more likely to report less participation in MVPA weekly than younger children and adolescents and those from other social class groups.

The 'Children's Sport Participation and Physical Activity' study (CSPPA) presents information on PA and children and adolescents in the Republic of Ireland (Woods *et al.*, 2010). A total of N=5397 children from primary (N=53) and post-primary (N=70) schools were surveyed as part of this study. The participants completed self-report questionnaires and a small, sub-sample of participants (n=293) wore an activity monitor (accelerometer/pedometer) over a period of 7 days. Of the overall total of participants, N=4122 were post-primary students, ranging in school years from 1st to

6th (aged 12-18 years). The study found that only 12% of post primary students met the Department of Health and Children (2009) PA recommendations (≥ 60 minutes MVPA daily). On average, participants (aged 10-18 years) achieved the PA recommendations on 4.0 days per week. For males, the number of students who met the current PA recommendations ranged from 27% (aged 10-12 years), 24% (aged 12-13 years), through 16% (aged 14-15 years) to 7% (aged 16-18 years). The number of females who met the current PA recommendations ranged from 13% (aged 10-12 years), 13% (aged 12-13 years) 8% (aged 14-15 years) to 6% (aged 16-18 years). For both genders, the proportion of students meeting the PA guidelines decreased with age and females were found to be less physically active than males. Again, this trend is in keeping with the previously mentioned trends for young people in the US and across Europe.

Summary of section 2.5

The review of the literature on the prevalence of PA in youth shows that adolescents' are not active enough. The recommended amount of ≥ 60 minutes MVPA daily (DOHC, 2009; WHO, 2010) is not being met by large numbers of adolescents. The high percentage of Scottish adolescent males (70%, aged 13-15 years) meeting National guidelines is positive (Ormstan *et al.*, 2010). This could, however, be due to the PA recommendation in Scotland for children and adolescents of ≥ 60 minutes of moderate PA daily, as opposed to the WHO (2010) recommendation of ≥ 60 minutes of MVPA daily. It may also be highlighting the limitation of self-report as a valid measurement of PA in adolescents on its own. There also appears to be a consensus that PA levels decrease with age in adolescence and that males consistently report to be more active than females. Studies from Ireland show that Irish adolescents conform to these worldwide trends regarding PA levels and youth. The difference in participation levels of adolescents across studies highlights the need for a more accurate and clear definition of PA and how active adolescents should be on a daily basis.

The majority of studies reviewed have collected data on young people's PA levels through self-report questionnaires. The use of motion sensors to track the actual PA levels of young people is limited. The combination of self-report and motion sensor measurement are recommended (Chad *et* al., 2009; Morgan *et al.*, 2008; Twisk.,

2001). Much of the research into youth PA levels is through cross-sectional studies, restricted by a one-off questionnaire at a particular time of the year. This could produce miss-leading information from young people, as their PA levels in May, for example, could possibly be very different to their PA levels in December. This current study takes a longitudinal approach, with questionnaires and motion sensor assessment (pedometers) taking place three times in a single school year (autumn, winter and summer) to give an accurate picture of PA levels during the different seasons of the school year.

2.6 Correlates of Physical Activity in Adolescents

In order to get more young people physically active on a regular basis, we need to identify and understand the correlates of PA for young people. The correlates of PA for young people are the key factors relating to whether they take part in PA or dropout. In keeping with previous reviews from adult correlates, Sallis and colleagues (2000) included the following as the five main categories of determinants of PA for children and adolescents i.) demographic and biological factors, ii.) behavioural factors, iii.) psychological factors, iv.) social environment factors v.) physical environment factors. These correlates of PA for youth have been given much attention by researchers, as they categorise a multitude of different correlates. Three comprehensive reviews that are focused on here are from Sallis and colleagues (2000) *Review of Correlates of Physical Activity for Children and Adolescents*; Biddle and colleagues (2005) *Correlates of participation in PE for Adolescent girls: A Systematic Review* and Van Der Horst and colleagues (2007) *A Brief Review on Correlates of Physical Activity and Sedentariness in Youth*. Both the Van Der Horst and colleagues review (2007) and the Biddle and colleagues review (2005) elaborate on the Sallis and colleagues (2000) review, using the same correlate categories. The following are the make-up of the studies that were reviewed.

Sallis and colleagues (2000) reviewed fifty-four studies of potential correlates of PA among adolescent youth (aged 13-18 years) that covered a period of nearly thirty years from 1970-1998. Sample sizes ranged from 51 to 7302 with a mean of 1286 (SD=1645). Overall, 1-28 variables were evaluated, 83% of studies had a cross-sectional design, 68% of studies were carried out in the US. In terms of measures, 69% used unvalidated self-reports, 28% were empirically supported self-reports and

4% were objective measures PA. Biddle and colleagues (2005) reviewed papers (N=50) published between 1999 and 2003, with a specific focus on adolescent females (aged 10-18 years). Sample sizes ranged from 48-17,776 with a mean of 2448. In total, 1-21 variables were evaluated. Eighty percent of studies had a cross-sectional design, and 20% were longitudinal or prospective. Sixty-four percent were carried out in the US. In terms of PA measurement, 18% were unvalidated self-reports, while 61% were validated self-reports. Eight percent were acceptable objective measures and 8% were unvalidated, self-reports and objective measures. Six percent were validated self-reports and objective measures. Van Der Horst and colleagues (2007) reviewed papers (N=43) published between 1999 and 2005 with a more concentrated focus on correlates of PA and sedentariness in adolescents' (aged 13-18 years). The sample sizes were unspecified and 1-23 variables were evaluated. Seven percent were prospective studies and 9% used objective measures.

Table 1 provides a summary of the three reviews and compares the correlates associated with PA in adolescents' found in each review. The correlates will be categorised under the following variables:

i. Demographic and Biological factors
ii. Behavioural factors
iii. Psychological factors
iv. Social Environment factors
v. Physical Environment factors

Demographic and Biological factors

All three reviews identified a consensus that increasing age and female gender are negatively associated with PA during adolescence. These findings are consistent with much research and Government publications worldwide on the prevalence of PA in young people (European Heart Network, 2001; Twisk *et al.,* 2001; Woods *et al.,* 2004; Fahey *et al.,* 2005; Nic Gabhainn *et al.,* 2007; Eaton *et al.,* 2009; Ormstan *et al.,* 2009; Woods *et al.,* 2010). There was no association found between ethnicity (Caucasian) and PA in adolescence in the Van Der Horst *et al*. (2007) review, however, it was positively associated in the Sallis *et al*. (2000) and Biddle *et al*. (2005) reviews. Biddle and colleagues reported a negative association for BMI

(skinfolds) and female adolescent PA, yet no association for this was found in the Sallis and colleagues (2000) or the Van Der Horst and colleagues (2007) reviews. A positive association was reported for family income in the review by Biddle *et al*. (2005), however, both the other two reviews reported no association. The Biddle and colleagues (2005) and Van Der Horst and colleagues (2007) reviews both found a positive association for higher parental education and PA in adolescence. This particular correlate was not included in the Sallis and colleagues (2000) review

Behavioural factors

The behavioural correlates linked to PA in youth were different across the three reviews. Sallis and colleagues (2000) and Biddle and colleagues (2005) both made reference to a positive association between community sport and PA. In terms of school sport, Van Der Horst and colleagues (2007) found evidence of a positive association, Sallis and colleagues (2000) found no association, while school sport was not included in the Biddle and colleagues (2005) review. Smoking was found to be negatively associated with PA in the Biddle and colleagues review, not included in the Sallis and colleagues (2000) review and no association was found in the Van Der Horst and colleagues (2007) review. The relationship between TV/sedentary time and PA was found to be negatively associated with PA in the Sallis and colleagues (2000) review, inconclusive in the Biddle and colleagues (2005) review and no association was found in the Van Der Horst and colleagues (2007) review. Active commuting was not included in any of the three reviews, which is a limitation of all three reviews, considering the opportunity for PA minutes that can be accrued by an active commute to and from school.

Psychological Factors

The association of psychological factors to PA in youth were inconsistent between the reviews. A positive association between perceived competence and PA was reported from the both the Sallis and colleagues (2000) review and the Biddle and colleagues (2005) review. No association was reported for perceived competence from the Van Der Horst and colleagues (2007) review. Self-efficacy was found to be positively associated with PA in the Biddle and colleagues (2005) and the Van Der Horst and colleagues (2007) reviews, while it was inconclusive in the Sallis and colleagues (2000) review. No association was reported between PA enjoyment in two of the

reviews (Sallis *et al*., 2000; Van Der Horst *et al*., 2007), however, it was positively associated with PA in the Biddle and colleagues (2005) review focussing on female adolescents. Perceived barriers and their association with PA also varied across the reviews. Biddle and colleagues (2005) reported that perceived barriers had a negative association with PA. The specific barriers included a 'lack of time', 'lack of interest' and 'too much effort required'. Sallis and colleagues (2000) found no association between perceived barriers and PA, while Van Der Horst and colleagues (2007) found the association between perceived barriers and PA to be inconclusive.

Social Factors

The social environment category was consistent across all three reviews. Family support was shown to be positively associated with PA in all three reviews highlighting the important role of parents and siblings in getting and keeping young people active. In terms of parental PA, two of the studies (Sallis *et* al., 2000; Van Der Horst *et* al., 2007) showed no association with adolescent PA, however, Biddle and colleagues (2005) findings for female adolescents' were slightly different. They found no association from the PA levels of the mother, but the father's PA levels had a positive association with PA. Both the Sallis and colleagues (2000) review and the Van Der Horst and colleagues (2007) review identified a positive association between peer involvement and support, and adolescent PA. Biddle and colleagues (2005) found the association between peer involvement and support, and females to be inconclusive. Teacher support was not included in any of the three reviews, which is a limitation and underestimates the potential of teachers (particularly PE teachers) to have an influence on adolescent PA participation. It is also a gap in our research knowledge.

Physical Environment Factors

The only physical environment variable included in two of the reviews (Sallis *et al*., 2000; Van Der Horst *et al*., 2007) was access to facilities/services. Both, however, found no association between access to facilities/services and adolescent PA. Biddle and colleagues (2005) review did not include any physical environment variables and they highlighted the need for a more extensive investigation into the role of environmental factors in terms of adolescent female PA.

In summarising the three reviews, the first aspect of note is the range of correlates associated with adolescent PA, which is extensive. It is also clear that there are a lot of differences between the reviews. These differences are in the form of measurement, sampling sizes, variables identified, gender etc. This has led to many inconsistencies in terms of identifying correlates of adolescent PA participation. Given the findings from the Biddle and colleagues (2005) review, which focussed on adolescent females only, there is a strong case for more gender specific investigations to identify the differences in correlates of PA between male and female adolescents. This could be crucial for identifying the main factors associated with getting adolescent males and/or females active on a regular basis, as no clear picture is currently available.

This current study focuses on male adolescents only. The demographic factors of the students were dealt with on the first page of the physical activity questionnaire (PA-Q). This study did not investigate physical environment factors, however, it was known that ECPA was offered in each of the four school involved. The main targets of the study were on psychological, behavioural and social factors associated with ECPA participation. Under psychological factors, the main emphasis was on perceived physical competence, physical self-worth and enjoyment of PA. The focus from the behavioural factors was participation levels in ECPA. From the social factors, the influence of parents and peers was investigated in terms of ECPA participation levels. The inconsistencies of the reviews in this section highlight the need for more research in the identification of correlates to adolescent PA participation.

Table 1: Comparison of Correlates Shown to be Associated with Physical Activity in Adolescence

Category of Variable	Correlates	Association Sallis et al., 2000	Association Biddle et al., 2005	Association Van der Horst et al., 2007
Demographic and Biological	• Gender	-	-	-
	• Age	-	-	-
	• Ethnicity (Caucasian)	+	+	0
	• BMI/skinfolds	0	-	0
	• Family Income/SES	0	+	0
	• Higher Parental Education	NI	+	+
Behavioural	• Smoking	?	-	0
	• TV/Sedentary Time	-	?	0
	• Participation in Organised Sport (School)	0	NI	+
	• Participation in Organised Sport (community)	+	+	NI
	• Active Commuting	NI	NI	NI
Psychological	• Perceived Competence	+	+	0
	• Self Efficacy	?	+	+
	• PA Enjoyment	00	+	0
	• Perceived Barriers	0	-	?
Social Environment	• Peer Involvement and Support	+	?	+
	• Family Support	+	+	+
	• Teacher Support	NI	NI	NI
Physical Environment	• Access to Facilities/Services	00	NI	0

Note: When more than 75% of association were in a similar direction this was coded as += positive association, -= negative association, 00=no association. When 50-75% were in a similar direction this was coded as +, - or 0. When exactly 50% of the findings were in a positive or negative direction, or there was a lack of consistency in the findings it was coded? = inconclusive, NI=not included in review

2.7 Youth Physical Activity Promotion Model

In order to understand how to change adolescent PA behaviour, knowledge of models that help us to understand why adolescents adhere to, or avoid PA is important. Theses models provide us with a systematic way of understanding how correlates are related to each other and how they effect behaviour change. They help us to improve our theoretical understanding of behaviour change and they help to design effective interventions and test their efficacy. For the purpose of this thesis the Youth Physical Activity Promotion (YPAP) model (Figure 1) has been identified as the most appropriate to guide its research design.

The YPAP model (Welk, 1999) is based around an acknowledgement of the influence of personal, social and environmental factors on children's PA behaviour. The model is seen as a tool to try and promote PA in children. In order to guide PA promotional efforts, the various correlates of PA have been placed under factors that 'predispose', 'reinforce' or 'enable' PA. Personal demographics are also discussed.

Predisposing Factors

In terms of PA behaviour, the model here asks two simple questions 1) 'Is it worth it?' and 2) 'Am I able?' The first question 'Is it worth it?' basically tries to identify attitudes towards PA, perceived benefits of participation and the level of enjoyment and liking of PA that children and young people experience through participation. The second question 'Am I able?' looks to identify how children and young people view themselves in terms of variables such as physical self-worth and perceived physical competence. It is suggested that children can value PA, but may not persist with it if they do not feel competent at it. Welk (1999) suggests that because children normally value what they are good at and continue with these endeavours, strong links can be expected between the two questions.

Reinforcing Factors

The reinforcing factors are made up of variables that reinforce children's PA behaviour. In other words, the social influence of, primarily, family and peers, but also coaches, on their PA participation. Welk (1999) suggests that these reinforcing factors are an important influence on children and adolescents PA participation. Parental support or encouragement could improve the children and adolescents

perception of competence. This could lead to increased levels of PA participation. However, a lack of parental support could decrease PA participation levels. Welk (1999) also makes reference to a change in children and adolescent's source of influence, as they get older suggesting that peers become more of an important source of influence than parents. To a lesser extent, coaches and PE teachers could be playing or could play a major part in influencing PA behaviour in children and adolescents, yet this is an area that is under researched.

Enabling Factors

The enabling factors consider conditions or personal attributes that can allow or have an impact on participation in PA e.g. fitness levels, skills, access and the environment. The model suggests that children and adolescents who are fit and have the necessary skills are more likely to participate in PA and continue with it than those with poor levels of fitness and skills. Access to areas that allow PA are also possible determinants of PA as children and adolescents can only participate if there is an opportunity to do so, however, even though the opportunity may be there, participation is not guaranteed. The weather is also noted as having an influence on PA participation. In this present study, the enabling factors were measured in section one and two of the questionnaire by way of PA levels and ECPA participation levels. A limitation of the study is that the physical environment beyond the school was not measured, however, the study did control for ECPA by ensuring that it was offered in all schools involved.

Personal Demographics

Personal demographics look at the possible influence of variables such as age, gender, ethnicity/culture and socio-economic status on PA behaviour in children and adolescents. The participants of this present study were male (aged 12-15 years) and all from disadvantaged backgrounds.

Overall, the model suggests that children and adolescents who respond positively to the questions 'Am I able?' and 'Is it worth it?' and receive positive reinforcement are more likely to participate in PA on a more regular basis than those who answer both questions negatively and receive negative or no reinforcement from significant others e.g. parents and peers. In the present study, the YPAP model has been used to

identify any possible improvement to psychological well-being of adolescent males from participation in ECPA. The main area targeted is the predisposing factors. The question of 'am I able?' is linked with perceived physical competence and physical self-worth. The 'is it worth it?' question is linked with any enjoyment adolescents may receive from participation in ECPA. These are the main areas of psychological well-being to be targeted in this study to find out how they affect PA behaviour in adolescent males (aged 12-15 years).

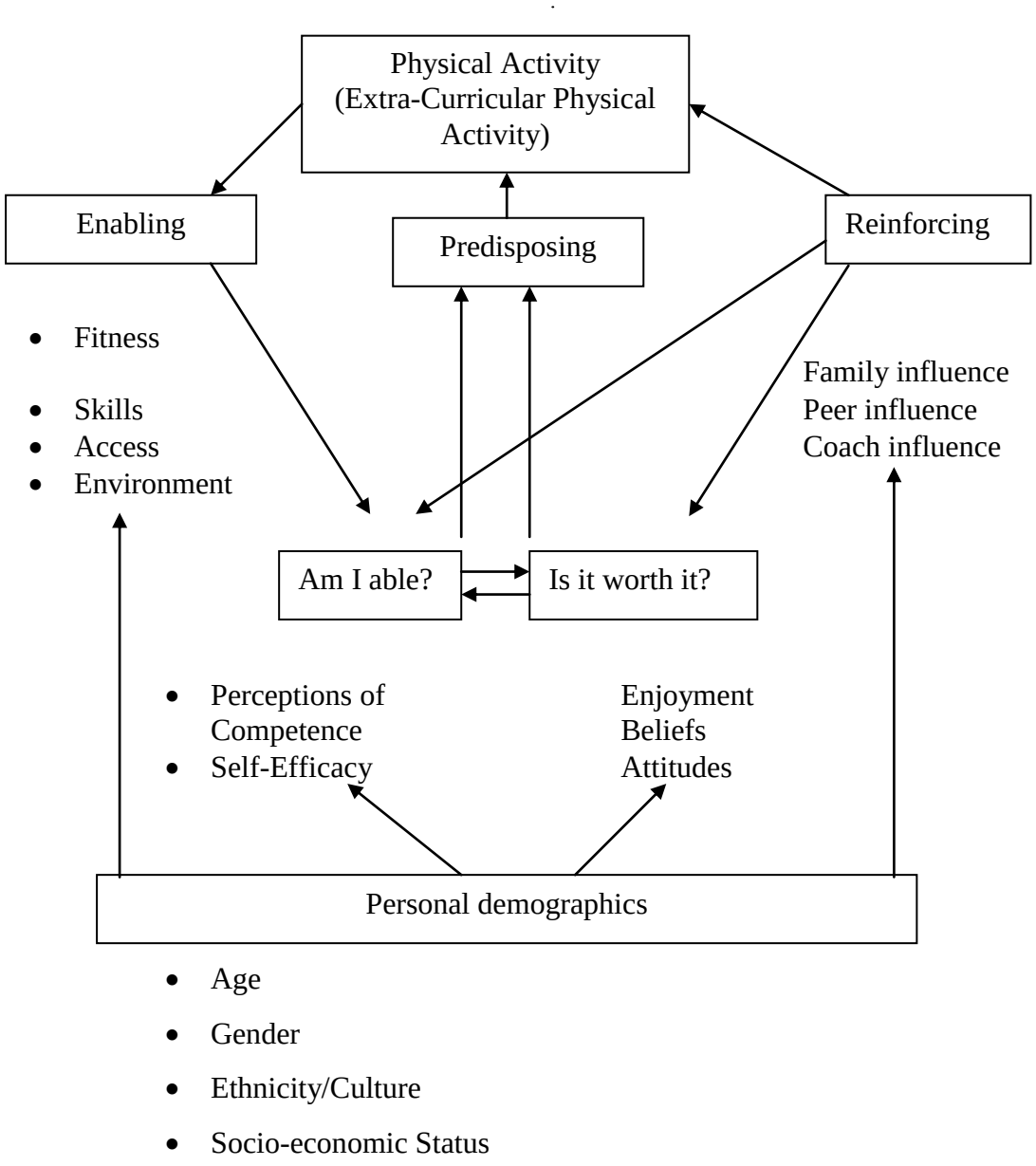


Fig 1. Youth Physical Activity Promotion Model (YPAP, Welk, 1999).

2.8 Measurement of Physical Activity Levels in Adolescents

The recognition of the importance of PA for optimal health has led to an increased interest in accurately assessing PA behaviour (US Department of Health and Human Services, 1996). Monitoring the PA levels of youth in order to gather accurate and reliable information is problematic (Tudor-Locke *et al.,* 2004). According to Sallis and colleagues (1993), there is no single PA measure that is fit for all purposes. Cale and Harris (2005) suggest that accurate assessment of PA levels in youth is important for several reasons including establishing current levels of PA and compliance with PA recommendations. Detail is given below of the most popular methods for measuring the PA levels of young people in free-living environments. Numerous methods of measuring PA for children and adolescents exist. These include objective (e.g. motion sensors) and subjective (e.g. self-report) methods.

Accelerometers

Accelerometers are electronic devices that can measure accelerations produced by body movement (Cale and Harris, 2005). The small instruments are usually worn on a belt at the waist and they can record PA levels reflecting the intensity of movement (Smith and Biddle, 2008). They use piezo-electric transducers and microprocessers to convert body accelerations to a quantifiable digital signal referred to as counts. The advantages of the accelerometer are that they provide an objective, non-reactive, relatively unobtrusive and reusable tool for assessing PA (Siriad and Pate, 2001). They are also relatively easy to use, information can be stored over a number of days and data collected by the accelerometer can be downloaded to a computer for analysis (Baumgartner *et al.,* 2007). According to Welk (2002), they are one of the most popular techniques in assessing levels of PA. This has been shown by the use of accelerometers in providing objective measures of compliance with PA recommendations in the US in recent years (Heyward, 2010). The limitations to accelerometer use is the inability to detect upper-body movement when worn at the hip, when walking on an incline, water based activity and the high cost (Welk, 2002). They can also be misplaced or forgotten about if data collection covers a few days or more.

Pedometers

Pedometers are small, battery-powered mechanical devices that are used to count and monitor the number of steps taken by an individual (Heyward, 2010; Smith and Biddle, 2008). Pedometers are typically attached to a belt around the waist. The advantages of pedometers are that they are small, inexpensive, unobtrusive, objective and re-usable (Sirad and Pate, 2001; Cooper, 2003). This makes them a useful monitoring device when measuring PA levels in children and youth. However, pedometers have a number of disadvantages. According to Baumgartner and colleagues (2007), pedometers are insensitive to static forms of PA such as weightlifting, they are not waterproof, thus making them more liable to be destroyed and that they have to be removed for any water based PA. Pedometers may be removed from the waist and shaken to increase the steps recorded or jumping up and down may increase PA. Pedometers with a reset button available could invalidate results if pressed by an adolescent. Pedometers, like accelerometers, are also easily misplaced or forgotten about if data collection covers a few days or more. For the current study, pedometers were chosen as the most appropriate motion sensor to measure students' PA levels, due to their cost-effectiveness with a large number of participants, ease of use and their relative accuracy.

In order to achieve PA health benefits, Tudor-Locke *et al.* (2004) established that the average age and sex specific pedometer cut points should be 12,000 steps/day for females and 15,000 steps/day for males. These cut-offs were established using a contrasting groups method to establish criterion-referenced standards based on body mass index (BMI) categories from 2000 boys and girls from the USA, Australia and Sweden. The cut-off points were seen as optimal for separating normal-weight and overweight/obese students (aged 6-12 years), with students averaging fewer steps than the cut-off points per day more likely to be overweight/obese.

In Canada, children and youth (N=11,669, aged 5-19 years) were recruited from across the country to establish average daily step counts for the Canadian Physical Activity Levels among Youth (CANPLAY) survey (Craig *et al*., 2010). Participants were asked to wear a pedometer of 7 consecutive days and to log daily steps. Results showed that, on average, males took 12,259 steps daily and females took 10,906 steps daily. These figures are well below the recommended 16,500 steps daily for children

and youth (Canada's PA Guide, 2009). The survey found that overall, males were more active than females, PA levels decreased with increasing age and average weekday step counts were higher than weekend day step counts.

An Irish study by Belton and colleagues (2010) investigated the number of students (N= 301, 51% male, aged 6-9 years) meeting the Tudor-Locke *et al*. (2004) daily step count recommendations for this age group, and explored any relationships between step count and self-reported PA patterns during and after school. PA was assessed using the Yamax SW200 pedometer worn over a period of 7 days. In addition to this, participants completed a self-report questionnaire 'Attitudes Towards PA' (adapted from Pieron *et al*., 1996). Results showed that the majority (69%) of the participants achieved the recommended cut-off points. Children who took part in PA immediately after school had a significantly higher step count in the weekday ($p=0.029$) and after school ($p=0.015$) periods, but not in the overall average step count. In addition to this, children were found to be more active on weekends than on weekdays. The results are positive in terms of the amount of children meeting the daily step count recommendations (69%), however, it highlights the need to promote further opportunities for primary school children to be physically active in the school day e.g. through more PE or active commuting. At post-primary school, ECPA provides an extra opportunity for students to be physically active and raise daily step count levels.

Objective measures of PA in adolescents are becoming more and more frequent in research. Pedometers offer a practical method of assessing PA levels in youth and provide a simple way of tracking daily PA given as a summary output of steps per day (Tudor-Locke *et al*., 2008). According to Trost (2007) pedometers are now a viable alternative to accelerometers as they are cheaper and more cost-effective for large-scale studies. Pedometers provide valuable feedback about steps taken and they have emerged as self-monitoring tools to promote PA in youth (Lubans *et al*., 2009). For these reasons, pedometers were chosen as the motion sensor of use for this current research.

Self-Report

Self-report instruments are a useful way of identifying activity patterns in large groups of people (Welk *et al.,* 2000) and are the most widely used and practical

method for collecting information regarding PA in youth (Smith and Biddle, 2008). According to Mathews (2002), self-reporting PA instruments are an invaluable tool when in PA research due to their simplicity, flexibility, validity and minimal expense. One of the main advantages of the self-report method of monitoring PA is the flexibility of a questionnaire. Welk and Wood (2000) suggest that existing questionnaires can be adapted and alternative questionnaires can be devised using existing ones as a guide. This flexibility makes the self-report instrument a popular choice in PA research. Baumgartner and colleagues (2007) suggest that if participants can be relied upon to give honest responses to questions on a questionnaire, that it is a relatively inexpensive method of collecting data on a large scale over a short period of time.

Smith and Biddle (2008) state that self-report instruments fall into two main categories: recall-based measures and general measures. Recall-based measures look to gain information regarding young persons PA on a specific day or number of days, while general measures focus on specific PA behaviour. This study combines objective and subjective methods of PA measurement. Objectively we measure PA via pedometer step count. Subjectively, both recall (list questionnaire) and general (list questionnaire) measures are used. These will be discussed in more detail in the methodology. The limitations of using self-report techniques to assess PA are well known. These limitations may include misunderstanding the questions, difficulty in recalling the time or intensity of PA or possibly giving the wrong information deliberately (Welk *et al.,* 2002).

2.9 Pillars of Adolescent Physical Activity

According to the School Children and Sport in Ireland report (Fahey *et al.,* 2005) organised sport in Ireland rests on three main pillars:

i.) Physical Education
ii.) Extra-Curricular Physical Activity (played in school)
iii.) Sports clubs and physical activity outside of school

Fahey and colleagues suggest that these three pillars are providing the majority of physical activities for Irish children and adolescents. Woods and colleagues (2010)

referred to active travel to and from school as another opportunity for adolescents' to be physically active. This literature review will highlight the importance of active travel to and from school as another pillar of PA in youth:

iv.) Active travel to and from school

i. Physical Education (PE)

"*The PE curriculum has a key role to play in providing appropriate physical activity opportunities, information and guidance to young people, and in encouraging and empowering young people to make informed lifestyle choices*" (Cale and Harris, 2005:166).

Liukkonen (2007) suggests that PE has the potential to influence many young people in schools and those students who receive positive experiences and enjoyment from PE can develop a strong foundation for the practice of lifelong exercise activity. PE in schools is seen as an important way of encouraging young people to be physically active, which can promote their health and well-being (Cale, 2000; Blanksby & Whipp, 2004). According to Biddle and colleagues (1998) important aims of PE are to i) promote the adoption of a physically active lifestyle that persists throughout adulthood and ii) to provide situations where young people are required to interact with each other, thus producing a rich environment for social development. The value of PE in schools is recognised by a number of researchers who have argued that it is the best opportunity to address the health-related needs of virtually all children and youth (Fairclough 2003; Fairlcough and Stratton, 2006; Sallis and McKenzie, 1991; Shephard and Trudeau, 2000).

According to Luikkonen and colleagues (2007) curriculum goals for PE are designed to have an effect on personality and social functioning and look to promote the development of positive self-perceptions and social skills. In their survey of fifty-two countries around the world, Bailey and Dismore (2006) found that the promotion of lifelong PA was a universal aim of PE, highlighting PE as an important vehicle in getting children and adolescents active. The PE syllabus in Ireland suggests that participation in PE should promote recognition of individual capacities, a positive

attitude towards participation and an appreciation of the benefits of interaction with others (Department of Education and Science, 2003).

Time Allocated to PE in Schools

The 'Children and Young People – the Importance of Physical Activity' document, emphasised how PE is such a hugely important area in terms of young people being physically active (European Heart Network, 2001). The paper suggested that provision of PE has declined in many schools across Europe and indicated that much more should be done in order to enhance PE by way of more time being allocated to it and improvements in provision. This same paper also recommended that the time devoted to PE in the school curriculum be increased to three hours per week for all age groups. For countries with no existing statutory minimum time for PE, an initial aim should be for a statutory two-hour minimum per week (European Heart Network, 2001).

A study published by the European Parliament entitled, 'Current Situation and Prospects for PE in the European Union', stated that the average time allocated to PE in schools across the European Union is 109 minutes. The study also found that students (aged 9-14 years) were allocated the most amount of PE in schools and overall, time allocation of PE decreased with increasing age of the students (Hardman *et al.*, 2007). The PE and Sport Survey (2009/2010) looked at levels of participation by students in PE in schools (N=21,436) across England (Department for Children, Schools and Families, 2010). The survey found that students in the years 1-13 spent an average of 117 minutes in a typical week on curriculum PE. The survey also found a big difference in the amount of time students participated in PE as they progressed through post-primary school. In school years 7-9 (aged 12-14 years), the amount of students who participated in at least 120 minutes of PE was 87%. For years 10-11 (aged 15 –16 years), the number decreased to 64% and for years 12-13 (aged 17-19 years), only 23% of students were participating in the recommended 120 minutes at least of PE each week in school. These statistics show a major decrease in PE participation levels of adolescent students with increasing age.

In Ireland, the recommendation is that all post-primary students should have at least two hours of PE per week (Department of Education and Science, 2003). This,

however, has been highlighted as not being the case in a large number of second-level schools in Ireland. Generally, the contribution of PE to the development of children and young people is recognised; however, sport and PE can be looked upon as the poor relation in the school curriculum in Ireland, where other subjects certainly take precedence over it (MacPhail and Halbert, 2005). The ESRI report, School Children and Sport in Ireland, revealed that second level students were receiving, on average, 69 minutes of PE per week and that participation levels decreased as students moved up through the second-level school years (Fahey *et al.*, 2005). The CSPPA study (Woods *et al.*, 2010), which was designed as a follow up to the School Children and Sport in Ireland (Fahey *et al.*, 2005) study, reported that only 10% of second-level students were timetabled with the Department of Education and Skills recommended minimum minutes (120) of PE per week in 2009. The report also found that, on average, second level students received 77 minutes of PE weekly and that most of the pupils were receiving double class periods.

The study indicated that senior cycle pupils received less PE time than junior cycle pupils and that 5% of post-primary students received no timetabled PE in school at all. The 5% were mainly made up of senior cycle students. The reported decrease in PE participation as students get older is in line with the findings of Fahey and colleagues (2005).

Content of PE in Schools

The Irish PE syllabus for second level schools is made up of seven core disciplines – adventure activities, aquatics, athletics, dance, games, gymnastics and health related activities (Department of Education and Science, 2003). Fahey and colleagues (2005) report suggested a dominance of team sports delivered in PE lessons, and they highlighted the gap between the multi-activity approach of the syllabus and the narrow range of activities students actually did. The most common physical activities in PE lessons were soccer (74%), basketball (68%) and badminton (45%). For males, soccer (83%), basketball (60%) and Gaelic football (50%) were the most common physical activities undertaken in PE lessons, while, for females, basketball (77%), soccer (65%), badminton and rounders (both 54%) were the most common. Overall, a large majority of pupils reported no exposure in PE lessons to dance (86%), swimming (86%) and gymnastics (81%).

The more recent CSPPA study (Woods *et al*., 2010) also found that games were the dominant activity delivered in second-level schools' PE lessons. The most common physical activities in PE lessons were basketball (56%), soccer (54%) and rounders (47%). For males, soccer, basketball and badminton were the most common physical activities undertaken in PE lessons, while for females, basketball, rounders and badminton were most common. Overall, other strands of the PE curriculum were found to be largely ignored. A large majority of second-level pupils reported no exposure to swimming (85%), no exposure to outdoor and adventurous activities (76%) and no exposure to dance (76%) in PE lessons. Again, these findings are very similar to the findings of Fahey and colleagues (2005), highlighting the dominance of games activities within school PE programmes. A greater emphasis on individual physical activities was recommended in the report to make PE more appealing to females.

Attitude Towards PE in Schools

Pieron and colleagues (1997) published a paper on 'Attitudes Towards School and PE'. This European research project was focussed on young people (aged 12-15 years). A self-report questionnaire was completed by N=6,766 students (N=3142 males/3,624 females) across eight European countries. The study found that students were more positive about PE than they were about school. Between 60% and 70% of students reported to 'like' PE in school. In general, the younger students looked more positively on PE in school than their older counterparts, which again, is in line with the suggestion of PA levels decreasing with increasing age of young people. Pieron and colleagues (1997) highlighted the more positive attitude towards PE than to school and believed that it should be built upon in the future.

A study carried out by Wang and colleagues (2008) 'Student's Attitudes and Perceived Purposes of Physical Education in Singapore' looked at students' attitudes towards PE in four Singapore schools. In total, 493 second-level school students (N=222 males, 262 females, 13-18 years) completed self-report questionnaires. Generally, the findings of the study portrayed a positive picture of PE in Singapore. The students reported a high level of enjoyment in PE. Enjoyment of PE was analysed through an adaptation of the Intrinsic Motivation Inventory (McAuley *et al*., 1989). The items were measured on a 5-point Likert scale ranging from 1 (strongly

disagree) to 5 (strongly agree). The mean score for enjoyment from the whole cohort was positive at 3.58 out of 5. Students also reported a high intention to participate in physical activity and a belief that PE has the potential to enhance social status. The results also indicated that the students believed that the purpose of PE involved showing them how to lead a fit and healthy lifestyle and to increase their self-esteem. To establish self-esteem, among others, as a possible purpose of PE, an adapted version of the Perceived Purposes of PE Questionnaire (McNeill and Wang, 2005; Wang and Koh, 2006) was used. Responses from this part of the questionnaire were made on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The mean score for the self-esteem from the whole cohort of students was 3.33. This strong relationship found between self-esteem and enjoyment of PE in this research highlights the potential, positive psychological benefits to be gained from PE participation for many young people.

The positive findings from the Wang and colleagues (2008) and Pieron and colleagues (1997) studies, in terms of enjoyment of PE and improved self-esteem from PE involvement, are in line with the psychological benefits to young people identified in research with PA participation, which have been highlighted in this review. This indicates an important link between PA and PE. Prochaska and colleagues (2003) argued that enjoyable PE might increase student engagement, which in turn may increase or maintain participation in PA outside of school. The link between PA and PE has also been alluded to by Kirk (2005) who highlighted the importance of schools and school PE in improving sustained participation in PA.

A report by the Women's Sport and Fitness Foundation (WSFF, 2011) provided an insight into the attitudes of primary and secondary school students in England (N=1,500) to sport and PA. The report showed that 51% of all females are put off sport and PA because of their experiences of school sport and PE. The least active of the females surveyed were found to be very negative about PE. Forty-six percent of the least active females surveyed suggested that they did not like the activities they do in PE. Forty-five percent of females felt that PE was too competitive. The females who were most active were very positive about PE and stated that they would like more of it in school. Twenty-two percent of the most active females, however, also stated that they did not like the activities in PE'. Over a quarter of females stated that

they did not feel they had the skills to do well in sport and the confidence levels were found to be lower amongst those who were less physically active. Seventy-six percent of females were found to be self-conscious about their bodies and 20% of post-primary school females felt their body was on show in PE, making them like PE less.

In Ireland, the ESRI study (Fahey *et al.*, 2005) found that post-primary students, generally, had a positive attitude towards PE and sport in school. When asked if they 'enjoyed PE/sport in school', 81% of students either 'agreed strongly' or 'agreed slightly' with the statement. In terms of gender, males reported to be very positive about PE and sport in school (66% strongly agree), while females were positive (47% strongly agree). An area of difference was that males enjoyed the 'pressure to win' in PE/sport (64%), while females were less keen under those circumstances (36%). A major negative about participation that was highlighted was 'being left out for not being good enough'. One third of students either 'minded this a lot/minded this a bit'. When asked 'are you good at sport?', 14% of males and 30% of females reported that they 'disagreed slightly/strongly' with this question. Overall, however, the general attitude of students towards PE and sport in school was positive. School principals were asked in the same study about their attitude towards the amount of PE and sport undertaken by students in post-primary schools. Overall, 49% of principals felt that in junior cycle, it was 'too little' while 50% felt that it was 'about right'. In terms of senior cycle, it was reported that 70% felt it was 'too little' while 29% thought the amount was 'about right'. A large majority of principals (71%) reported that they believed sport was 'very important to the ethos of their school', while none thought it to be 'unimportant'.

The CSPPA study (Woods *et al.*, 2010) also looked at what post-primary school principals thought about the amount of PE and sport their pupils were undertaking in school. The majority of principals (58%) believed that the amount junior cycle pupils received was 'about right', while 59% felt that there was too little on offer in at senior cycle level. Not one of the principals (N=59) reported that there was 'too much PE on offer at either junior or senior level'. In terms of facilities, 41% of principals felt that their school sports facilities were 'not at all adequate'. A majority (58%) indicated that a major investment in sports facilities was needed in their school.

Summary of PE

This section of the literature review highlights the importance of PE as part of the curriculum in second level schools. The time allocated to PE on the curriculum in Ireland, however, is not meeting Government recommendations. The review also highlighted the worrying trend of adolescents being allocated less PE as they increase in age. This is a real concern as the review has already showed evidence of adolescents' PA levels, in general, decreasing with age, particularly in females.

There is a dearth of information as to why this decrease in PA is occurring, particularly from an Irish perspective. The need to find out the reasons for a drop in PA levels, from the students themselves, is vital to try and keep young people physically active throughout adolescence. Focus group discussions need to be carried out to get young people talking and to obtain a real sense of their attitude towards PE. Studies have shown that the content of PE lessons in post-primary schools is dominated by games and team sports. The emphasis on competition and team sports in PE lessons may be a reason why females are less enthusiastic about PE in school than males. Again, the amount of research into this particular area is limited, particularly from an Irish perspective, and students need to be consulted at to what activities they do or do not enjoy in PE and why. The present study has its emphasis on ECPA in post-primary schools. Self-report questionnaires and focus groups carried out on three separate occasions throughout the academic year track students' participation in and their views on ECPA over time. The findings, however, may give an indication as to student views on PE in school and their involvement or otherwise in it and how attitudes may change with increasing age from first to third year.

ii. Extra-Curricular Physical Activity (ECPA)

ECPAs are designed to further the curriculum of schools and PE teachers have a central role in terms of promoting PA and sport beyond the normal school curriculum (Capel, 1997). ECPA is the one school context that has the potential to play a significant role in the promotion of childhood and adolescent PA (Cleland *et al*., 2005; Trudeau and Shephard, 2005). The European Heart Network (2001) report on children and young people emphasised the importance of PA promotion going beyond the PE curriculum in schools. The potential benefits of participation in ECPA include, increasing the chances of lifelong participation in sport (Bass and Cale, 1999)

and enhancing pupils' health (Curtner-Smith *et al.,* 2007). Within the literature, however, the health benefits of ECPA participation for young people are only referred to as 'potential'. Researchers are still unclear to the actual extent to which involvement in ECPA contributes to pupil's health (Curtner-Smith *et al.,* 2007).

From an American perspective, ECPA is often not considered as an extension of the curriculum, as it is in other countries and in American schools, is often given a more elevated status than PE by pupils, parents, teachers and administrators (Curtner-Smith *et al*., 2007). The indication is that the predominant model of American ECPAs is highly conservative and focussed on winning in a narrow range of team games (Curtner-Smith *et al.,* 2007). Teachers are often hired because of their ability to coach a sport rather than their teaching prowess (Cleland *et al.,* 2005).

As already stated, ECPA in school is one of the main pillars of organised sport in Ireland (Fahey *et al*., 2005). The ESRI study by Fahey and colleagues (2005) states that the amount of ECPA offered to post-primary students in schools depends on the willingness of teachers to take on these extra duties outside of their formal teaching duties. It is also important to mention the importance of clubs or sporting organisations coming into schools to run PA programmes. In a similar vain to the Fahey and colleagues (2005) study, which suggested that ECPA's offered in post-primary schools depended on the willingness of teachers to take on extra duties, the Woods and colleagues (2010) study suggested that the quality of ECPA programmes in schools is dependent on the goodwill of teachers, in most cases.

Levels of ECPA Participation in Schools

Over the last two decades, studies have been carried out to identify the number of students participating in ECPA in England and Wales. The Young People and Sport in England 2002 survey focussed on students across 63 post-primary schools (Sport England, 2003b). Students completed a self-report questionnaire. The survey found that 34% of students reported taking part in ECPA at least once a week, 23% of students on two or more days a week and 15% on three or more days a week. In terms of participation once a week or more, numbers dropped from 43% of students in school years seven to nine (aged 11-14 years), to 35% of students in years ten to

eleven (14-16 years of age). The survey also indicated that, overall, 41% of students took part in ECPA at some time or other in the previous year. The findings showed that participation rates in extra-curricular PE declined as the students moved up through the schools years.

In Wales, a 2004 questionnaire based survey Active Young People (Sports Council Wales, 2006), found that 42% of post-primary school students were taking part in ECPA at least once a week, 17% participated two or three times a week and 8% participated three or more times a week. Overall, 71% of students reported taking part in ECPA at some stage during 2004. Participation rates with age also reported a drop in Wales, with 51% of year seven (aged 11-12 years) students to 38% of year eleven (aged 15-16 years) students participating once a week or more in 2004. A study conducted by Smith and colleagues (2007) 'Young People's Participation in National Curriculum Physical Education' examined the levels and forms of participation in PE and ECPA of 1010 (N=497 males/513 females) students (15/16 years) attending seven post-primary schools across the northwest of England and the northeast of Wales. All of the Year eleven students involved completed a Young People, Sport and Leisure (YPSAL) self-report questionnaire. The study found that males (3%) and females (2%) participated in ECPA five or six times a week. The numbers that reported involvement three or four times a week included males (30%) and females (24%). Twice a week ECPA participants included males (40%) and females (43%). The students who reported involvement on only one occasion a week, included males (26%) and females (29%). Overall, 46% of students in this study reported to have participated in ECPA in school at least once in the previous twelve months.

In Ireland, the ESRI study (Fahey *et al*., 2005) found that, overall, a far higher frequency of students were participating in ECPA compared to PE. The number of students participating in ECPA four or more days a week was 22% (33% male and 10% female). The number of students participating in ECPA two or three days a week was 30% (29% male and 30% female). The number of students participating in ECPA only once a week was 18% (15% male and 23% female). The findings suggest that males are more regularly involved in ECPA than females and that 29% of females are unlikely to take part in ECPA at all compared to just 16% of males. The number

of students who never took part in ECPA in school was 22%. This study showed a gradient of decline in ECPA participation (for both males and females) as they moved up through the second level school cycle. For example, the number of second year students that participated in ECPA four or more times a week was 25% compared to 17% of sixth year students. The amount of students who participated in ECPA two or three days a week also decreased as the age level increased (36% of second years down to 24% of sixth years). This trend is in line with the previously mentioned decline in PE participation levels, as students move up through the school cycle. In terms of ECPA involvement at least once per week, among males, soccer (28%) and Gaelic football (22%) were reported to be the most popular ECPA's. For females, basketball (20%) and Gaelic football (12%) were most popular. In a similar vain to PE in second level Irish schools, invasion games were highlighted in this study as the dominant ECPA on offer.

Following on from the ESRI study (Fahey *et al.,* 2005), the CSPPA study (Woods *et al.,* 2010) provides the latest insight into ECPA participation rates in Irish second level schools. The study indicates that the number of students participating in ECPA four or more days a week was 31% (41% male and 21% female). The number of students participating in ECPA two or three days a week was 26% (26% male and 27% female). The number of students participating in ECPA only once a week was 16% (12% male and 19% female). Overall, 16% of students reported never to take part in ECPA, while more females (21%) than males (11%) never took part in ECPA. The number of students participating in ECPA decreased as students progressed through second level education. As an example, the number of second year students that participated in ECPA four or more times a week was 32% compared to 21% of sixth years. The amount of students who participated in ECPA two or three days a week also decreased as the age of the students increased (29% of second years down to 22% of sixth years). The decrease in participation with age was found to be more prevalent in females than in males. These decreases in participation with increasing age mirror the results from the Fahey and colleagues (2005) study in ECPA and PE.

Content of ECPA in Schools

The Sport England (2003b) survey highlighted the dominance of traditional, competitive games offered as part of ECPA in schools with football (15%) and netball

(7%) the most frequently attended among all the second level students. Football and netball were the two most popular ECPAs participated in by males and females respectively. This is supported by Smith and colleagues (2007) who also found that the most widely played sports and physical activities in ECPA were football (52%) for males and netball (24%) for females. The next most widely played physical activities for males and females were basketball (14%) and hockey (15%) respectively. The study concluded that the kind of physical activities and sports on offer in post-primary schools have an impact on whether students participate in ECPA or not.

In Ireland, the ESRI report (Fahey *et al.,* 2005), in terms of ECPA involvement at least once per week among males, soccer (28%) and Gaelic football (22%) were reported to be the most popular activities. For females, basketball (20%) and Gaelic football (12%) were most popular. In a similar vain to PE in second level Irish schools, invasion games were highlighted in this study as the dominant ECPA on offer (Fahey, 2005). Recently, the CSPPA study (Woods *et al.,* 2010) found that soccer (17%), gaelic football (12%) and basketball (9%) were the most popular ECPA's among males. The most popular ECPA's among females were basketball (14%), Gaelic football (9%) and athletics (9%). These findings showed how games dominated male ECPA participation, while a mix of individual and team based activities proved most popular among females.

Attitude Towards ECPA

In terms of attitude towards ECPA and sport in general, young people reported to be generally confident about their involvement in it, however, there was concern about feelings of 'not being good enough' (Sport England, 2003). This view from the UK corresponds with the Curtner-Smith and colleagues (2007) view in the US, in that ECPA is often geared towards a minority of pupils with a competitive focus at its core. Curtner-Smith and colleagues (2007) also suggest the need for more exploratory research around the area of ECPA in schools. They proposed an investigation into the attractiveness of ECPA to post-primary students and also to verify or refute the idea that students who take part in ECPAs are already active and those that do not participate are relatively inactive.

From an Irish perspective, there has been little or no research carried out into the attitude of post-primary school students towards ECPA. The CSPPA study looked at school principal's attitude towards ECPA in school (Woods *et al.*, 2010). The study found that all principals felt ECPA was important to the ethos of their school. Most described it as 'very important' (79%) or 'fairly important' (21%).

Summary of ECPA

This literature review looked at ECPA in schools by way of levels of participation, content and attitude towards it. In terms of participation levels, the research suggests that the numbers are high, but are mirroring the trends found in PE and PA participation (males more physically active than females and a decline in PA with age). The research regarding ECPA in schools has been mostly carried out using the self-report methods for measuring PA participation and correlates of PA. There is a need for research to consider qualitative research in order to find out, from actually talking to young people, what are their key motives, barriers for participation in or avoidance of ECPA. The need to find out why students do or do not participate in ECPA in school is important. If more young people are to be active on a more regular basis, then the reasons behind their participation or non-participation in ECPA are required.

Research has shown that the content of ECPA is similar to the content of PE lessons in schools. Studies from the UK and Ireland found that physical activities on offer were both competitive and traditional team games. This emphasis on team games, and a lack of broad and balanced opportunities for PA may be a reason for the decline in numbers of students participating, as they get older. There is a need for research into the attitudes of students towards ECPA to find out what physical activities adolescents would like to see offered. Smith and colleagues (2007) believe that what ECPA schools offer is a critical factor in understanding school differences in participation levels.

iii. Sports Clubs and Physical Activity Outside of School

The European Heart Network document on Children and Young People – The Importance of Physical Activity (2001), states that after school and weekends are key

times associated with activity for young people. The document suggests that if young people are inactive during these times, they are unlikely to reach recommended PA levels. Therefore, it is important that facilities and services are provided to aid the promotion of PA outside of school time. The document also suggests that the role of national governing bodies of sport in providing opportunities for participation in both school and after school settings should be considered. Clubs that are run outside of the school system are an important part of the institutional structure of sports participation in Ireland (Lunn *et al.,* 2007).

Level of Participation

The Health Survey for England (HSE, 2008) found that 95% of males and females (2-15 years) had taken part in some form of PA outside of school in the past week. The survey also showed that more males than females had taken part in formal sports (49% of males and 38% of females) and the same trend occurred for informal activities (90% of males and 86% of females). The Take Part survey (Woods *et al*., 2004) showed that the most popular sports participated in by youth (11-15 years) both in and out of school over the previous four weeks were football (53%), basketball (29%) and swimming (28%).

The ESRI produced some interesting statistics in this area from their 'School Children and Sport in Ireland' study (Fahey *et al.,* 2005). They found that a high frequency of participation in sport by students is through sports clubs outside of school. The findings showed that 18% of students surveyed participated in non-school sports clubs four or more times a week (25% male and 11% female) and 34 % participated two or three times a week (39% male and 30% female). The study also indicated that 18% of students surveyed participated one day a week (14% male and 22% female). The number of students that never participated in non-school sports clubs was 21%. The findings of this study show that there is a general decrease in participation levels, with increasing age, among second level students in non-school sports clubs. An example of this decrease was found with second year students where 21% reported participating in non-school sports clubs four or more days a week, compared to 20% of third years, to 14% of both fifth and sixth year students. These reported figures are similar to the trends found in the same study with ECPA participation, where student participation also decreased with increasing age. The decline in participation levels

with age was, however, more consistent and steeper across the adolescent age groups with ECPA than with non-school sports clubs.

The Health Behaviours of School-aged Children (HBSC, 2009) study concluded that 27% of males and 23% of females aged ten to eleven years old were exercising four to six times per week outside of school (Nic Gabhainn *et al.,* 2010). The ESRI 'Growing up in Ireland' study found that 75% of nine year olds were involved in organised sports/fitness clubs outside of school (Layte and McCrory, 2011). Again, this is demonstrating the emerging pattern of PA participation decreasing with an increase in age of young people.

The CSPPA study (Woods *et al.,* 2010) found that 64% of second level students participate in extra-school sport at least once a week. The number of students participating in extra-school sport four or more days a week was 24%, 30% were participating two to three days a week and 10% were participating one day a week. The number of students who reported never to participate in extra-school sport was 34%. The findings also showed that participation rates decreased with increasing age of students. Participation at least once a week decreased from 70% (aged 12-13 years) to 65% (aged 14-15 years) to 57% (aged 16-18 years). Those who never participated in extra school sports increased with age also, 25% (aged 12-13 years) to 34% (aged 14-15 years) to 41% (aged 16-18 years). This trend is similar to the trend identified in the Fahey and colleagues (2005) study, which also reported a decline in non-school sports club participation levels with increasing age of students.

Most Popular Games/Sports Participated in

Gaelic football and soccer (invasion games) were the two most popular sports engaged in by male second level students outside of school (29% participating weekly in Gaelic football and 31% in soccer). Gaelic football and dance were the two most popular sports engaged in by female second level students outside of school (14% participated weekly in Gaelic football and 13% in dance). Fahey and colleagues (2005) indicated that the high participation rates reported in non-school sports clubs highlights their importance as an outlet for PA among Irish adolescents.

The CSPPA study (Woods *et al.*, 2010) looked at the most popular extra school club sports and extra school sports. They found that Gaelic football was the most popular extra school club sport participated in on a weekly basis (22%), followed by soccer (20%), swimming (15%), dance (14%) and hurling (11%). For males, the most popular physical activities reported were Gaelic football (27%), soccer (32%) and hurling (17%). For females, the most popular extra school club sports were dance (23%), swimming (19%) and Gaelic football (17%). Eighteen percent were involved with sports clubs at a basic level (recreation purposes), 57% were involved at a competitive level (club competitions) and 25% were elite (competing at a regional or a national level). Significantly, the study concluded that participation in extra-curricular school sport led to a 60% increase in the likelihood of involvement in extra school clubs. Another interesting finding from the study was that 10% of second level students chose not to participate in ECPA in school or extra-school sport or PA. The main reasons given for not taking part were a 'lack of time' and feelings of 'incompetence'.

Summary of Sports Clubs and Physical Activity Outside of School

In summary, a large part of adolescents' PA participation comes in the form of PA outside of the school setting. One of the main trends highlighted is the decrease in PA levels of adolescents with increasing age. The research carried out to date in Ireland, however, focuses on the numbers involved PA rather then the reasons why they either do or do not participate. The statistics highlight the problem, but do not give qualitative evidence as to why young people are active or otherwise. The CSPPA study gave a rare insight into the reasons why young Irish adolescents do not take part in ECPA or extra-school sport or PA (Woods *et al.*, 2010). The findings showed that these young people highlighted reasons such as a lack of time and feelings of incompetence for their lack of involvement. This present study has looked at the reasons behind non-participation in ECPA through self-report questionnaire and focus group work, which may give a more specific insight into why more young people are not physically active outside of school on a regular basis.

In terms of the most popular games/sports participated in outside of the school setting, the Irish studies showed a trend a similar trend to PE and ECPA with games dominating students' involvement. The studies by Fahey and colleagues (2005) and

Woods and colleagues (2010) showed that large numbers of Irish adolescents' were involved in sports clubs outside of school, highlighting their importance as a source of PA. To find out what it is that attracts students into sports clubs outside of school, however, has been somewhat under-researched. This is an area that needs to be looked at in future research in order to get more adolescents joining clubs and becoming more active on a regular basis.

iv. Active Travel to and from School

Travelling to and from school has been recognised as an opportunity for children and adolescents to achieve part of their recommended daily PA (NHS, England, 2011). The promotion of active travel to school can reduce inactive behaviour in young people and replace it with moderate intensity behaviour (Alexander *et al.,* 2005). Active travel is seen as walking or cycling all or part of the journey to a destination. Inactive travel is seen as using a form of motorised transport e.g. car or bus.

In the United Kingdom, a National Travel Survey (2009) looked at the travel habits of people from all age groups (Department for Transport, UK, 2010). Data was collected from 8,000 households across the UK covering almost 20,000 people. In terms of second level school students, the survey showed that 41% actively travelled to school. This total consisted of those who walked to school (38%) and those who cycled (3%). Of those who inactively travelled to school, the main modes of transport were by bus (32%) and by car (22%). The average distance students had to travel to school was 3.3 miles.

The School Children and Sport in Ireland report (Fahey *et al.,* 2005) looked at how young people travelled to and from school. Their results showed that 27% of students walked to school, 3% cycled, 32% were brought by car and 35% went by bus. The majority of those who walked or cycled did so for a quarter of an hour or less (76% walking/89% cycling). Fahey and colleagues (2005) believe that the journey to school is not a major source of PA for second level students. The Central Statistics Office (CSO, 2006) in Ireland produced figures concerning second level school students' active travel to school. The CSO figures showed that only 27% of school and college students (aged 13-18 years) actively travelled in 2006. The main form of transport for those who inactively travelled was by bus (36%) and car (33%). The

figures from 2006 are lower than previous years and are part of a continuous downward trend in active travel to school since 1991. The CSO figures show that in 1991, for the same age range of students, 42% actively travelled to school. In 1996, the figure dropped to 36% and in 2002, the figure had decreased to 29%. In terms of gender, the CSO figures from 2006 suggested that males (29%) were more likely to actively travel than females (25%) and only 5% of males and less than 1% of females cycled to school in 2006.

The CSPPA study (Woods *et al.*, 2010) found that 40% of second level school students either walked or cycled to school in 2009. Only 3% of those cycled to school. The average journey time for active travel to school was fifteen minutes. In terms of gender differences, females (38%) were less likely to actively travel to school than males (43%). The results produced no evidence to show a decline in active travel to school with increasing age. Distance (54%) and time (19%) were reported as the main barriers to active travel to school. A third barrier of convenience (8%) was also prominent amongst students with many suggesting that it was easier to get the bus than to walk.

Summary of Active Travel to school

A recommendation from the Children and Young People – the Importance of PA report was to prioritise walking and cycling to school for students (European Heart Network, 2001). The latest figures published over the last number of years shows that the numbers of second level school students who actively travel to school are increasing (Woods *et al.*, 2010). The CSO (2006) figures in Ireland, however, showed a decrease in the number of students who actively travelled to school over a fifteen-year period (1991 – 42%/2006 –27%). The evidence from the Woods and colleagues study is more positive and indicates the importance of active travel to school as another source of PA for young people. Woods and colleagues do, however, give a note of caution when analysing results in terms of the differences in student samples and the time of year in which data was collected (2004 – October/November, 2009 – March, April and May). It would be beneficial for any future studies in this area to target specific times of the year, as part of a longitudinal study, to observe any differences in active travel to school during a school year or over a number of years.

Another important area of research for active travel to school is the students' attitude to PA and in this particular case, active travel to and from school. To encourage and promote active travel to school, it is vital to know why some students do walk or cycle to school and why others are inactively travel to school. In Ireland, very little research has analysed the reasons for these behaviours. Woods and colleagues (2010) did look into this as part of their CSPPA study, finding that second level school students gave distance, time and convenience as the main barriers to active travel to school. The Department of Education and skills in Ireland, and schools themselves, need to promote active travel for students where it is actually possible to walk or cycle to school. The key is to find out what the students actually think about active travel and what would encourage them to do it. This is where focus group work with students could be extremely valuable.

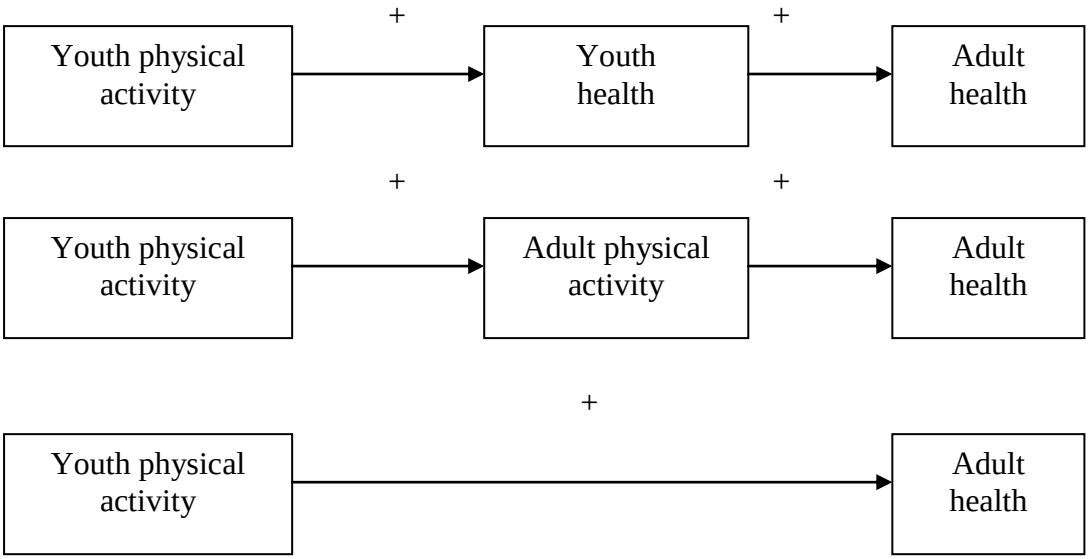
Research studies show a similar trend, in terms of gender, as the figures from studies in PE and ECPA and PA show in general. The trend highlighted was that of male students being more likely to actively travel to school than females. Unlike the findings from PE, ECPA and PA, where a drop off in PA levels occurred with age, active travel figures in the Woods and colleagues (2010) study showed that students (aged 18 years) were as likely to walk or cycle to school as younger students (aged 10 years). This is potentially a really important finding. It highlights active travel as a valuable source of PA in young people, particularly with senior cycle students in second level schools, where the research has shown a real decrease in PA levels.

2.10 Overall Literature Review Summary and Future Research Challenges

This literature review has highlighted the many health benefits to be gained by young people from PA participation. The health benefits can be physical and psychosocial. The research has found, however, many inconsistencies in the physical effects, in particular, on young people from PA. This has led to some researchers (Riddoch *et al.,* 1998; Twisk *et al.,* 2001; Cale and Harris, 2005) questioning the physical benefits to young people from PA that are regularly suggested when promoting PA in youth. Research has shown, however, that habits and patterns of PA in youth can have an effect on PA activity levels into in adulthood. Twisk (2001) illustrates the importance of PA in childhood and adolescence with his model (derived from Blair *et al*., 1989)

looking at the possible, positive outcomes (Table 2). The model is used to highlight the positive answer research has given to the question of whether or not there is a relationship between childhood and adolescent PA and health. The first answer shows that youth PA is related to youth health, which can be a predictor of adult health. The second answer shows that PA during youth is related to PA during adulthood, which is related to adult health status. Finally, the third answer shows that PA during youth is directly related to adult health status. This model emphasises the possible importance of PA in adolescence and highlights the need for clear PA guidelines. Given the concern over the consistency of the physical health benefits of PA in youth, a real emphasis on the psychological and social health benefits to be gained from PA are worth investigating.

Table 2: Relationships between PA during Childhood/Adolescence and Adult Health (Twisk, 2001, derived from Blair *et al*., 1989)



The over-reliance on self-report measures, in terms of young people and their levels of PA involvement has decreased the validity of certain findings. The current study will combine self-report with motion sensors (pedometers) to gain a more accurate picture of PA levels in youth. The accuracy of the two methods combined is still questionable, as the student's self-record their step count, however, the double measurement is arguably a more definitive assessment of youth PA levels. This study hypothesises that students who take part in ECPA regularly have a higher step count than students who never take part in ECPA.

The review has also looked at the pillars of PA for young people. It found that males are more active than females, participation levels decrease with increasing age and there is a dominance of traditional team games in PE, in ECPA and in PA outside of school and in sports clubs. The lack of research into ECPA in second level schools, from an Irish perspective in particular, is evident. ECPA is an excellent school based source of PA for adolescents, and therefore, demands attention. This study specifically targets male second level students (aged 12-15 years) to identify levels of ECPA participation.

Research has shown that there is a possible relationship between psychological well-being and PA (Altintas and Hulya Asci, 2008; Calfas and Taylor, 1994; Inchely *et al*., 2011; Mutrie and Parfitt, 1998). The psychological factors of physical self-worth, perceived physical competence, enjoyment and liking of PA are of fundamental importance to this research study. These factors are all part of the YPAP model. The hypotheses being tested, guided by the Youth Physical Activity Promotion model (Welk, 1999; Rowe *et al*., 2007) is that adolescent males with high levels of physical self-worth, perceived physical competence, enjoyment and liking of PA will be more likely to i) regularly participate in ECPA, ii) meet PA guidelines and iii) have a higher pedometer step count than an adolescent with lower levels of physical self-worth, perceived physical competence and enjoyment and liking of PA than those who do not regularly participate in PA.

This literature review determined that there is a need for qualitative evaluation of adolescents' reasons for non-participation and also, to gain information on how to motivate them to become more active. This study will use focus group discussions with samples of students who have a similar outlook on ECPA i.e. groups of students who regularly attend and groups who never attend ECPA in school. The focus groups should provide students with an open environment to share their honest views on ECPA in schools. The CMO report stated that childhood and adolescence is the best opportunity for influencing attitudes towards PA (DOH, England, 2004). It also suggests that students who emerge from their school years with confidence about their physical skills and bodies and who have had positive experiences of PA are likely to be active during adulthood. This suggestion emphasises the role ECPA in schools can play in getting young people active and positively affecting their psychological well-

being. The importance of finding out what regular ECPA participants enjoy about being involved is vital, as it has been suggested that poor or negative PA experiences can reduce the self-esteem of young people (Health Education Authority, 1992; Hopper, 2005: Bailey, 2005). This could negatively affect their future involvement in PA and therefore, making PA, PE and ECPA more enjoyable and positive is vital in terms of getting young people active and keeping them regularly active. This literature review has shown that enjoyment of PA and being with friends are two important correlates for young people being physically active. Additionally, the positive effect on psychological well-being has been identified as a key factor in the PA participation of children and adolescents. This particular study has ECPA in schools as its core focus. ECPA needs more exposure to highlight its importance as a source of PA for second level school students. This study examines the possible affects on the psychological well-being of adolescent males from regular ECPA involvement. The findings, if positive, could benefit organisations trying to encourage more young people to be physically active on a more regular basis.

Chapter Three

3.0 Methodology

3.1 Research Design

The aim of this study is to examine ECPA participation amongst Irish post-primary males (aged 12-15 years) from disadvantaged communities and to evaluate the potential impact of this participation on their psychological well-being. It will also investigate the motivations and barriers to ECPA participation. This mixed-method study involved collection of self-report data via questionnaires, physical data via pedometer step counts and qualitative data via focus group discussions. The focus group discussions provided the study with a real insight into students' honest opinions regarding ECPA and the combination of quantitative and qualitative research strengthened the validity of the results. A longitudinal research design was used, with data collected at three separate time intervals, time 1 (autumn), time 2 (winter) and time 3 (summer) throughout a single academic school year (2008/2009). This approach was taken in order to control for seasonality. This chapter will describe participant selection, data collection measurements and the data analysis procedures. A framework for the research is shown in Table 3.

Table 3: Framework for Research

Time of Year	Quantitative Data	Qualitative Data
Autumn (time 1)	Questionnaires (N=174) Pedometers (n=146)	Focus Groups 1-8 (n=43)
Winter (time 2)	Questionnaires (n=170) Pedometers (n=96)	Focus Groups 9-16 (n=42)
Summer (time 3)	Questionnaires (n=154) Pedometers (n=84)	Focus Groups 17-24 (n=41)

3.2 Participants and Recruitment

At school level, a purposive sampling procedure was used with N=4 schools invited to take part in the study. The entire sample of four schools were north-side, City of Dublin Vocational Education Committee (CDVEC) schools. All schools were designated 'DEIS' schools (Delivering Equality of Opportunity in Schools) by the Department of Education. These schools cater for young people from socially and economically disadvantaged communities (Department of Education and Skills, 2009). The principal in each of the schools was sent a letter (Appendix C) and then contacted individually by phone to outline the purpose of the study, what it would involve, what would be required from students and requesting their permission to involve their particular school and students. All four schools contacted committed to taking part giving a 100% recruitment rate. Ethical approval for the study was obtained from Dublin City University (DCU) Research Ethics Committee. All students and their parents received an information leaflet (appendix D, Plain Language Statement) on the study and parents provided written consent (appendix D) for their child to be involved in the study. All students involved provided assent (appendix D) and were free to withdraw from participation in the research at any stage. Dates and times for data collection were then agreed with the individual PE teachers from each of the participating schools. At the individual student level, a specific class group from first, second and third year in each participating school was randomly selected. The criteria for inclusion in the study were males in first, second or third year of post primary school, aged 12-15 years at the outset of the study and in full time education. The cohort consisted of N=174 participants (N=30%, 1st years; N=39%, 2nd years; N=31%, 3rd years, mean age = 13.59 $\pm$ .91).

3.3 Results and Methods

Pilot Study

Piloting of the Physical Activity Questionnaire (PA-Q, Appendix E) took place in one of the recruited CDVEC schools in May 2008. The sample (N=7) of students (aged 15 years) were all male and in third year of post primary school. Third year was selected as these students would be moving on to fourth year the following September and thus would not have to withdraw from the study. However, recruiting a larger

sample of students proved difficult due to the proximity of exams. Third years were chosen to make sure that the questionnaire was comprehensible and to find out how they would cope with a pedometer for a week. No problems were reported with comprehension or layout of the questionnaire. The students each wore a pedometer for 7 days and recorded steps taken in an activity diary **(**Appendix F). All pedometers were returned safely and results recorded satisfactorily. The group also took part in focus group discussions to assess the suitability of interview questions. Group one (N=4) was made up of students who reported, on their questionnaire, to 'regularly' participate in ECPA at school. Group two (N=3) was made up of students who reported 'never' taking part in ECPA. The focus group discussions revolved around the students' attitude towards and participation in ECPA in school. The discussions were useful as the students' reported being comfortable in groups with people who had a similar participation level and attitude to ECPA as them. The pilot focus groups also provided information on suitability, time and type of probes to use in actual focus groups for the study.

Questionnaire Data Collection

The researcher and a member of the PE staff in each school supervised data collection from the questionnaire. The students were in groups of no more than 30, giving a ratio of adults to students at approximately 1:15. Completion time for the questionnaire ranged from 40-50 minutes with an average time completion of 45 minutes. The procedure was as follows:

1. Students were seated in a normal classroom setting
2. Each student was given a questionnaire and their name was checked on a list to make sure that consent forms had been signed by a parent
3. The students were all given an individual I.D. number to be written on their questionnaire
4. The students were given a brief outline of the aims of the study and a detailed instruction on how to complete the questionnaire.
5. The students' attention was drawn to the importance of section 2 on the questionnaire that related to their participation in ECPA in school.

6. Students were informed that the questionnaire was not a test, that there were no right or wrong answers, and that the responses they gave needed to be accurate and honest.

7. Students were encouraged to ask any questions that they may have had and they were informed that their responses would be treated in confidence and that their I.D. numbers would be used rather than their names.

8. Students were informed that they had approximately 25 minutes to complete section 1 and 2 of the questionnaire.

9. After approximately 20/25 minutes, the group put down their pens and were given a more detailed instruction on how to complete section 3 of the questionnaire. This was due to section 3 being different from the rest of the questionnaire in terms of questions asked and how to respond to those questions.

10. The example question at the start of section 3 was written on the board in the classroom and a student from the group was asked what type of student they were in relation to the statement 'Some students like football BUT other students don't like football very much'. From the response the student gave, the correct box was ticked on the board to make it clear to all students how they should answer the questions properly.

11. The students were told to make sure to tick one box only from each statement in section 3.

12. The researcher and the individual schools' PE staff moved around the classroom asking students if they were able to understand the questions and had a quick check on the students' questionnaires to see if they were being completed correctly.

13. Students were informed that they had 5 minutes before they had to hand up the questionnaires and were told to read over the questionnaire making sure that all questions were answered.

14. Participants handed up their questionnaires and were praised for their co-operation up to that point.

Pedometer Data Collection

The procedure adhered to for pedometer data collection was as follows:

1. The students were shown what a pedometer looked like by the researcher at the front of the class.
2. The researcher informed the students of why they were being given the pedometers and the importance of keeping them safe.
3. The researcher explained how the pedometer worked, what its purpose was and a demonstration was given on where to place the pedometer on their person (attached to top of trousers/tracksuit bottoms at the waist).
4. Students were then shown a diary card (Appendix F) in which they were to keep an account of their daily step counts.
5. Students were advised to record each days step count total when they went to bed at night or first thing in the morning. They could then reset their pedometer once the daily step count was recorded. Diaries were also to be used to record physical activities that they may have been involved in, which required the pedometer to be taken off. They were told that the pedometer needed to be removed if they thought the activity, which they may be involved in, was a danger to the safekeeping of the pedometer e.g. playing football. The students were also reminded that the pedometers needed to be kept safe and were not to get wet
6. Students were informed that the researcher would check the pedometer as they left the classroom and it would be set to zero.
7. The students were told to write the code, which was on each individual pedometer, onto their diary card, once they were given out.
8. The researcher and the PE teacher present, distributed the pedometers and the diary cards to the students.
9. Students were given five minutes to 'play' with the pedometer, check they knew what to do with it and got used to placing it on their person.

10. The researcher and the PE teacher present both went around to each individual student checking everyone had a pedometer that worked, that they knew what to do and that the code on the diary matched the one on the pedometer.
11. The students were informed that the pedometers and the diary cards would be collected from them in school on the following Friday (7 days later).
12. The students were thanked for their willingness to participate and asked again to take good care of the pedometers and to record honest results in their diary cards. They were also told to speak to their PE teacher during the week if they had any problems with the pedometer or the diary completion. They were reminded again to wear the pedometer during all waking hours unless swimming, washing, or taking part in any activity where it would be unsafe to wear.
13. The students were asked to line up at the exit door and have their pedometer attached to their waist at the top of their trousers/tracksuit, preferably close to the hip.
14. As the students left, the pedometer was checked for correct attachment to the waist and reset to zero.

Focus Group Data Collection

In each of the four participating schools, two separate groups of students (approximately 5/6 per group) took part in focus group discussions at each of the three time points across the academic year. One group consisted of students who regularly took part in ECPA and the other group was made up of those who never took part in ECPA at school. Students were selected to take part in the focus groups with the aid of the physical education teachers in the particular schools who were aware of the students' ECPA involvement or non-involvement. An interview script containing the list of questions guided the discussions, yet they were not used to limit the researcher probing or asking follow-up questions. The focus groups were held post self-report and objective data collection at each of the three time points and the same students took part at each time point. Discussions took place in a small classroom in each school and lasted approximately thirty minutes. The procedure adhered to for the focus group discussions were as follows:

1. The students were informed that the discussion would revolve around their participation or non-participation in ECPA in school and their attitude towards it.
2. The researcher made the students aware that the discussion would be recorded, but that no one would hear the recording other than the researcher and also, they were assured that their names would not be used in the research.
3. The students were made aware that they did not have to answer any questions that they did not want to and they could withdraw from the focus group discussion at any time.
4. The researcher read though the list of questions to be used in the discussion before the recorder was started so that the students were aware of what they would be asked.
5. The students were asked to relax, to try and be honest in their answers, to speak if they had something say and to try and not talk across one another so that all opinions could be picked up on the tape recorder.
6. The tape recorder was turned on and the researcher began with first question on the list.
7. At the end of the discussion, the students were asked if they had anything else they wanted to add, they were thanked for their participation in the focus group and the tape recorder was switched off.

3.4 Instruments

PA Questionnaire

The 'Physical Activity' Questionnaire (PA-Q) was a multi-section instrument designed specifically for this study. This involved using a combination of well-known, valid and reliable self-report measures. All measures were chosen, as they were developmentally suitable for adolescents and they addressed the key areas of interest of the research. The pilot study allowed the researcher to determine the feasibility of the measures for the questionnaire, identify the length of time to complete it and any problems with understanding. The PA-Q was made up of three sections (Appendix E). Section 1 consisted of questions on Habitual Physical

Activity (HPA). Section 2 focussed on ECPA participation, and section 3 was an evaluation of psychosocial subscales relevant to the Youth Physical Activity Promotion model (Welk, 1999).

Demographics

Page 1 of the PA-Q collected demographic information including age, gender, school name, year in school and disability status.

Section 1 – Habitual Physical Activity (HPA)

A definition of PA was read to all students prior to questionnaire completion, giving further examples to clarify differences between intensities. PA was described as any body movement completed at either 'moderate' or 'vigorous' levels of effort. Moderate effort was described as 'making your heart rate and breathing faster than normal and you may sweat a little'. Examples given were brisk walking and jogging. Vigorous effort was described as 'making your heart rate and breathing much faster than normal, and you will probably sweat'. Playing football or squash were given as examples. Each student completed, on a scale from 0-7, the number of days during the last 7 (Question 1) and from a typical week (Question 2) that they had accumulated $\geq$ 60 minutes MVPA. To ensure that students understood the definition of PA and moderate and vigorous intensity activity, a definition with examples was included in the questionnaire.

This instrument, the PACE+ scale, was originally developed by Prochaska and colleagues (2001) as a reliable and valid screening measure to determine adolescents who met recommended PA levels. It was developed for use with adolescents in primary care (Prochaska, 2001) and was found to be reliable (intraclass correlation = 0.77) and correlated significantly ($r=0.40$, $p<0.01$) with accelerometer data (Prochaska, 2001). It has since been used in similar cross sectional research by the Take Part study (Woods *et al*., 2004), the 2006 Health Behaviours of School Aged Children (HBSC, Ireland) study (Ni Gabhainn, 2007), CSPPA study (Woods *et al*., 2010).

The main analysis from section 1 of the questionnaire was based upon working out the Habitual Physical Activity (HPA) levels (number of days $\geq$ 60 minutes MVPA per week) of students (combining question 1 and question 2 and dividing by 2). This composite average of the two items provided a score of days per week that the students had accumulated $\geq$ 60 minutes of MVPA (Department of Health and Children, physical activity guidelines, 2009). This analysis was carried out at each of the three time points of the study individually. In order to obtain a year-long average for HPA, the three individual results were totalled and divided by 3. For those students who had data recorded at only two time points (N=16), the information was totalled and divided by 2. Students with HPA data from one time point only (N=4) were excluded from year-long average levels.

Section 2 - Extra-Curricular Physical Activity (ECPA)

For the purpose of this study, ECPA was described for the participants as 'the provision of activities outside of the formal PE curriculum, most often after school and at lunch times, but also in some schools, at weekends and/or before school' (Penney and Harris, 1997:42). Four researcher developed questions assessed student-frequency of participation in ECPA. These questions were based on those used in the Take Part study (Woods *et al*., 2004) and the ESRI study (Fahey *et al*., 2005). The first question (Q.9), similar to the HPA question, asked students to rate their participation in ECPA in a typical week ranging from 1 = (never), 2 = (sometimes) and 3 = (regularly). The second question (Q.10) asked students to report on the type of ECPA they participated in by selecting from a range of potential ECPAs. This list was generated following consultation with the PE teachers from the four participating schools. This data was rank ordered from the highest proportion of students citing a particular type of activity to the lowest proportion of students for activity type at each time point. For year-long averages, the percentage participating in each ECPA at every time point was combined and divided by 3.

The third question (Q.11) qualified the frequency count, by asking students to report on frequency of participation in ECPA during the previous 7 days (defined as last week) on a 5-point categorical measure. This ranged from 1 = never, 2 = once in the past week, 3 = two or three times in the past week, 4 = four times in the past week and

5 = five times or more in the past week. These responses were then categorised into never participating in ECPA (assigned a value of 1), participating at least once a week in ECPA (assigned a value of 2) and participating twice or more per week in ECPA (assigned a value of 3). A composite average of these two items provided a score of the frequency of participation in ECPA at each time point. In order to determine year-long average for participation in ECPA, all three time point scores were combined and divided by three. For those students who only had data recorded at two time points (N=16), their total was divided by 2. The students who had data recorded at only one time point (N=4) were excluded from the study. Final year-long data was categorised into never (never participated at any time point), sometimes (participated at least once a week) and regularly (participating twice a week or more).

Finally, a fourth question (Q.12) investigated the barriers to ECPA participation for those students who reported never participating in ECPA. Students had a choice of four possible responses. These ranged from 'I don't enjoy PA', 'I'm too lazy', 'I don't think I'm good enough' and an 'other' option for any other possible reason for non-participation in ECPA. The results were analysed as percentage year-long averages with data from each time point being combined.

Section 3 - Youth Physical Activity Promotion model (YPAP)

In this section, a 39-item questionnaire designed by Rowe and colleagues (2007) was used to investigate PA behaviour in youth (Appendix E). The YPAP questionnaire was developed specifically to test the validity of the YPAP model (Welk, 1999), for the promotion of PA in children. It identified suitable existing questionnaires that met three criteria, namely i) they had a common response format, ii) were reasonably brief and iii) had satisfactory reliability and validity evidence for use with children (Welk, 1999).

Rowe and colleagues (2007) questionnaire comprised of seven subscales, which were used to evaluate the components of the YPAP model (Welk, 1999). The YPAP model consists of four main components, enabling, predisposing and reinforcing factors, and personal demographics. Under the predisposing factors, in order to answer the

question of 'am I able?' Whitehead's (1995) Physical Self-Worth scale (PSW) was used to get an indication of how the students' felt about themselves physically. Harter's (1985) Perceived Physical Competence scale (PPC) examined the adolescents' perceptions of their perceived competence at games and sports specifically. 'Games and sports' was the term used here rather than just 'sports' from the original scale (Harter, 1985). This was amended by Rowe and colleagues (2007) to make the statements closer to PA rather than athletic competence. Also under predisposing factors, the 'is it worth it?' question was investigated using Smith's (1999) Liking of Games and Sports (LGS), Fun of Physical Exertion (FPE) and Liking of vigorous Exercise (LVE) adaptations from the original 'Children's Attraction to Physical Activity scale (CAPA, Brustad, 1993, 1996) used to explore adolescents' overall enjoyment of exercise.

The reinforcing factors from the model examined the perceived influence of parents and peers on adolescent participation in PA. The Parental Encouragement subscale was chosen by Rowe and colleagues (2007) for this questionnaire, which originated from Brustad's (1996) three-parent socialisation subscale. This particular subscale was chosen due to the suitability of the questions focusing on parental behaviour towards the child's PA rather than parent's own PA behaviour. The Peer Acceptance subscale was also taken from the 'Children's Attraction to Physical Activity scale (CAPA, Brustad, 1993,1996) to identify the role played by peers in determining PA behaviour in children.

Enabling factors from the model relate to the opportunities children and adolescents have to be physically active. For the present study, the enabling factors investigated were students HPA levels (number of days $\geq$ 60 minutes MVPA per week), daily step count levels and their level of ECPA participation. These were measured in section one of the questionnaire. A limitation of the study was that the physical environment beyond the school was not measured, yet, ECPA was controlled for by making sure that it was offered to students in all schools involved. In terms of demographics, the study focussed on adolescent males (aged 12-15 years) from disadvantaged backgrounds.

The wording of each of the original questionnaire statements was changed slightly with the word 'kids' being replaced by the word 'students'. This was a suggestion from the pilot study students, who felt that 'kids', from the original questionnaire, related to young children rather than post-primary students (Table 4). The students were required to read each item carefully. Each item included two opposing statements describing two different types of individual who varied positively versus negatively on each of the seven YPAP subscales. The individual student had to decide which statement was most reflective of them (positive versus negative) and then indicate if the statement they agreed with was 'sort of true for me' or 'really true for me' by ticking a single box. Each item was subsequently scored between '1' and '4', with '1' being the most negative response and '4' being the most positive response. The YPAP scores from each individual subscale e.g. physical self-worth (PSW) were totalled for each time point and checked for internal reliability. Each time point total was then combined and divided by 3 to provide an average year-long score for that particular subscale. Any student who had data recorded from only two time points had their total divided by 2. The students who had data recorded at only one time point (N=20) received no YPAP yearly average scores. Each of the questionnaires subscales, the number of items in each and an example of each are shown in Table 5. All subscales demonstrated acceptable psychometric properties in its original development (Rowe *et al*., 2007).

Table 4: Examples of item modifications from the YPAP questionnaire for this study.

Some **kids** wish they could be a lot better at games and sports	**BUT**	Some **kids** feel they are good enough at games and sports
Some **students** wish they could be a lot better at games and sports	**BUT**	Some **students** feel they are good enough at games and sports

Table 5: Youth Physical Promotion Model (YPAP) Assessment Tools (adapted from Rowe, 2007)

Subscale	Number of items	Item Example	Cronbach Alpha
Whiteheads Physical Self Worth Scale (PSW)	6 items (1,8,15,22, 29,36)	Some students are proud of themselves physically **BUT** Other students don't have much to be proud about physically	.80
Harters Perceived Physical Competence Scale (PPC)	7 items (4,11,18,25,32, 37,39)	Some students do very well at all kinds of games and sports **BUT** Other students don't feel they are good when it comes to games and sports	.75
Liking of Games and Sports (Smiths adaptations) (LGS)	5 items (2,9,16,23,30)	Some students have more fun playing games and sports than anything else **BUT** Other students have more fun playing other things	.71
Fun of Physical Exertion (Smiths adaptations) (FPE)	5 items (5,12,19,26, 33)	Some students don't like getting sweaty when they exercise or play hard **BUT** Other students don't mind getting sweaty when they exerciser or play hard	.70
Liking of Vigorous Exercise (Smiths adaptations) (LVE)	5 items (7,14,21,28, 35)	Some students feel really tired after they exercise or play hard **BUT** Other students don't feel so tired after they exercise or play hard	.69
Brustads Peer Acceptance Subscale (from CAPA) (PA)	5 items (3,10,17,24, 31)	Some students get told by other students that they are not very good at games and sports **BUT** Other students are told that they are good at games and sports	.55
Brustads Parental Encouragement Subscale (from CAPA) (PE)	6 items (6,13,20,27,34, 38)	Some students have parents who play games and sports with them **BUT** Other students have parents who don't play games and sports with them	.67

Focus Groups

Focus group discussions were carried out in order to explore students' motivations and barriers in relation to ECPA participation. Informed by the pilot study focus group discussions, the following are the questions that were put to the students who regularly participated in ECPA:

1. What do you think ECPA is?
2. Do you get involved in it?
3. Do you think it is important to take part in ECPA?
4. What would be the main reasons why you attend?
5. Do your friends encourage you to go?
6. Are you encouraged to go by your parents/guardians?
7. Do you think your school offers enough ECPA?
8. What would you like in ECPA that is not currently available?
9. Do you find it difficult to stay back after school or at lunchtimes? Why?
10. Do you think it is important to take part in the context of your school life?
11. Would it affect you if there were no ECPA available in your school?

The questions posed to the groups that regularly participated in ECPA were designed to find out what it was that attracted students to ECPA and how it benefited them, particularly in terms of their psychological well being.

The following are the questions that were put to the students who 'never' participated in ECPA:

1. What do you think ECPA is?
2. Do you get involved in it? Why?
3. Do you think it is important to take part in ECPA?
4. What are your main reasons for not going?

5. Do you think you would benefit from going to ECPA more often?
6. Do you think that the students who attend on a regular basis are benefiting from it? How?
7. Do your friends encourage you to go?
8. Are you encouraged to go by your parents/guardians?
9. Do you find it difficult to stay back after school or at lunchtimes?
10. What would make you attend more often?
11. Do you think your school offers enough ECPA?
12. What activities would you like to take part in, that are not currently available?

The questions posed to the 'never' ECPA participation group were designed to examine the reasons behind their lack of participation in ECPA and what, if anything, might entice them to participate more often. The same two sets of questions were repeated at each round of the study to find out if students' responses would be consistent throughout the school year.

Pedometer Step Count

Physical activity was assessed using a Yamax Digiwalker SW200 pedometer (with a tamperproof cover) worn over a period of seven days. These particular pedometers have been accurate in measuring steps taken and have good instrument reliability (Bassett *et al*., 1996; Belton *et al*., 2010 Crouter, Schneider, Karabulut and Bassett, 2003; Schneider, Cruder, Lukajic and Bassett, 2003).

The 7-day (Friday-Thursday) pedometer step counts were recorded by each student in their pedometer diaries. The Friday step count total was disregarded in data analysis, as this was the day pedometers were distributed to students in all four schools. Due to the students receiving their pedometers at different times of the day, it was decided not to include Friday as part of the weekly total. A 6-day step count was totalled at each data collection time point. This number was then divided by six in order to get

an average daily step count per time point. The combined average daily step count (sum of T1 + T2 + T3) for each student was then divided by three in order to get an overall average daily step count across the school year. For those who only had data from two time points (N=16), the total was divided by two in order to get the year-long average. The students who had data collected at only one time point (N=76) received no average year-long step count. The distribution and collection days were omitted from the analysis due to the variability of time in which students received their pedometers. The same process applied to weekend day step counts, which were worked out by totalling the Saturday and Sunday step counts and dividing by 2.

3.5 Data Process

Data Storage

All data were labelled in order to avoid confusion, and to ensure suitability for tracking purposes, after each round of data collection. All hard copy questionnaires, step count recording diaries and focus group recording tapes, were stored securely in a locked room.

Data Entry

All questionnaire and pedometer data were entered into Statistical Package for Social Sciences (SPSS 17.0). Each set of data results at every time point was coded appropriately to enable the researcher to compare results from time point to time point. Focus group recordings were transcribed onto a word document and again, each time point was clearly labelled to enable the researcher to compare responses throughout the 3 separate time points.

Data Cleaning

In order to clean the data, SPSS, 17.0 was used. Descriptive statistics and frequency analysis were used to detect missing data. Manual cleaning of the data by the researcher also took place after each round of data collection to identify any unusual results or figures. No unusual figures were present. Any missing data was coded as 999. Unfortunately, at time 1 (autumn), a large proportion of students (n=20) from

one of the schools did not return pedometers. A decision was made which allowed that particular schools' students continue to participate in the study, however, they did not receive pedometers at time 2 (winter) and time 3 (summer). In order to ascertain students' average Habitual Physical Activity (HPA) level, average weekly pedometer step count and average YPAP score over the school year, data from each of the time points was combined and divided by three. For those who had 2 rounds complete, the data was combined and divided by 2. Only those participants who had a minimum of 2 rounds of data were included in average yearly HPA, ECPA and step count analysis.

Data Analysis

Quantitative data

Self-report measures were tested for internal consistency and reliability using Cronbach Alpha (α) where applicable. Table 6 shows that six out of the seven YPAP subscales were above the 0.7 criterion for good reliability. Liking of Vigorous Exercise (LVE) was the only subscale that was below the 0.7 criterion for good reliability, however, given the sample size and its previous consistency in testing (Table 4), it was deemed acceptably reliable. Table 6 shows that other YPAP subscales were above the 0.7 criterion for good reliability. The data were explored for homogeneity of variance, covariance, normality and outliers. Descriptive statistics and frequency analyses were conducted to assess means, standard deviations, minimums, maximums and percentages with figures and tables representing this data where appropriate. Paired sample T-tests and one way ANOVAs (F) with Tukey post-hoc tests were used to compare the means of interval parametric data and reveal where the difference lay. Categorical data, such as year group categories (1^{st}, 2^{nd}, 3^{rd}) and ECPA participation levels (never, sometimes, regularly) were analysed using Pearson's Chi-square test (χ^2). Pearson's correlations coefficients (r) were used to examine correlations between interval data. Repeated measures ANOVAs were used to investigate differences within the group over the three time points. Greenhouse geisser, Huynh-Feldt corrections were applied to control for sphericity and Bonferroni post–hoc comparisons, with conservative $p=<0.01$ were used to establish where differences lay. Multiple linear logistic regression analysis was used to examine

multivariate relationships between variables found to be significant through initial univariate analysis.

Table 6: Internal Consistency of YPAP Subscales for the Current Study

Subscale	N	Cronbach Alpha
Whiteheads Physical Self-Worth Scale (PSW)	174	.92
Harters Perceived Physical Competence Scale (PPC)	174	.86
Liking of games and sports (Smiths adaptations) (LGS)	174	.91
Fun of Physical Exertion (Smiths adaptations) (FPE)	174	.83
Liking of Vigorous Exercise (Smiths adaptations) (LVE)	174	.56
Brustads Peer Acceptance Subscale (from CAPA) (PA)	174	.84
Brustads Parent Encouragement Subscale (from CAPA) (PE)	174	.82

Qualitative Data

Due to the high number of focus groups (N=24) and students (N=43) involved, during the academic year, an extensive amount of text was assimilated. In total, N=28,251 words were transcribed, giving an average of n=9417 words per time point. Each focus group discussion was transcribed after each time point during the year. Analysis of the transcription was conducted using the constant comparison technique (Merriam, 1998), which facilitated the identification of similarities and differences, and the grouping of data into themes and sub-themes. In order to identify themes, repeated answers, suggestions and patterns were looked for in the transcripts. Data from each theme were broken down to identify sub-themes, which were more specific under the original theme. This method helped to give an accurate reflection of the participants' views and opinions on ECPA in school. The themes included expected

information as well as other emergent themes, which revealed interesting insights. The transcripts and a list of the themes and sub-themes were read over by a supervisor. After much discussion, when all the themes and sub-themes were agreed on, the most applicable and interesting quotes from participants were used to highlight the main themes that emerged from the transcripts (Appendix G).

For this study, a variety of strategies were used to ensure data trustworthiness and credibility. Participant verification was simply repeating to the students, after each focus group discussion, the main conclusions from the discussions, in order to verify that they were a true and accurate reflection of their views and opinions. Another strategy involved peer de-briefing, whereby, as already mentioned, a supervisor read over the text and agreed on the themes and sub-themes identified by the researcher. According to Creswell and Plano Clark (2007) one way of increasing trustworthiness is to utilize multiple methods of data collection so that the limitations of one method can be offset against the strengths of another. Tashakkori & Teddlie (2003) refer to the triangulation of data as combinations and comparisons of many data sources, which can include data collection, research methods and analysis procedures. This study combines quantitative data (self-report questionnaires and pedometer step count) with qualitative data, giving support to emerging themes from either source to improve the validity of the findings. Finally, Lincoln and Guba, (1985) suggest that prolonged engagement can maximize trustworthiness. The longitudinal approach to this study required the researcher to be in all four schools involved on numerous occasions throughout the academic year.

Chapter Four –Quantitative Data

4.0 Results and Discussion

This chapter will present the findings of the quantitative study in three separate sections. Section 4.1 will outline the demographics, section 4.2 will focus on the behavioural data including habitual physical activity (HPA), extra-curricular physical activity (ECPA), and pedometer step counts. Section 4.3 will examine the psychosocial data based on the Youth Physical Activity Promotion model (YPAP, Welk, 1999) and section 4.4 will conclude the chapter with a discussion of the findings in light of relevant literature.

4.1 Demographic Characteristics of the Sample and Numbers per Time Interval

Four north-side, City of Dublin Vocational Education Committee (CDVEC) post-primary schools were involved in this study. In total, N=174 Junior Cycle, adolescent males (aged 12-15 years, mean age 13.59 $\pm$ .91) participated in the study. School 1 contributed 22% (n=39), school 2, 18% (n=31), school 3, 22% (n=39) and school 4, 38% (n=65). The retention rate over the duration of the study was high with 98% of time 1 participants involved at time 2, and 89% of time 2 participants engaged at time 3. No significant differences were found between the time points in terms of participants' age or year group.

Distributions for questionnaire and focus groups were similar across all three time points. However, pedometer step count data was subject to change. At time 1, 146 participants completed step count diaries, this dropped to 96 at time 2 (66% retention) and 84 at time 3 (88% retention of time 2). The drop in retention from time 1 to time 2 was due to a single school. In school 4, 20 students (31% of sample within this school) did not return pedometers at the end of the first recording week. Due to financial implications, a decision was made to remove the pedometers from this school for future data collection time points and collect only questionnaire and focus group information. Descriptive statistics for the participants are presented in Table 7.

Table 7: Descriptive Statistics on Study Participants over the Three Time Points

Outcomes/Characteristics	Time 1 (Autumn)	Time 2 (Winter)	Time 3 (Summer)
Questionnaires (N)	174	170	154
Pedometer step count diary (N)	146	96	84
Focus group students (N)	43	42	41
Year group (%)	1st Years – 30% 2nd Years – 39% 3rd Year – 31%	1st Years – 30% 2nd Years – 39% 3rd Years – 31%	1st Years – 31% 2nd Years – 37% 3rd Years – 32%
Age (mean (SD)	13.59 (.91)	13.57 (.96)	13.58 (.91)

4.2 Behavioural Data

Meeting Physical Activity Recommendations

HPA refers to the current PA recommendations for adolescents of $\geq$ 60 minutes MVPA daily (Department of Health and Children, 2009). These data reveal that the majority of participants did not meet the current recommendations at any of the three time points (Table 8). On average, only 14% of the participants met the recommendations over the period of an academic year (Figure 3). A Chi Square analysis by year group revealed no significant difference in the amount of students meeting the recommendations between groups with 10% of 1st years, 15% of 2nd years and 15% of 3rd years achieving the recommendations.

Table 8: Habitual Physical Activity (HPA) per Time Point and Year-Long

HPA	T1 (Autumn)	T2 (Winter)	T3 (Summer)	Year Long
- Meeting Recommendation	27%	15%	18%	14%
- Not Meeting Recommendation	73%	85%	82%	86%

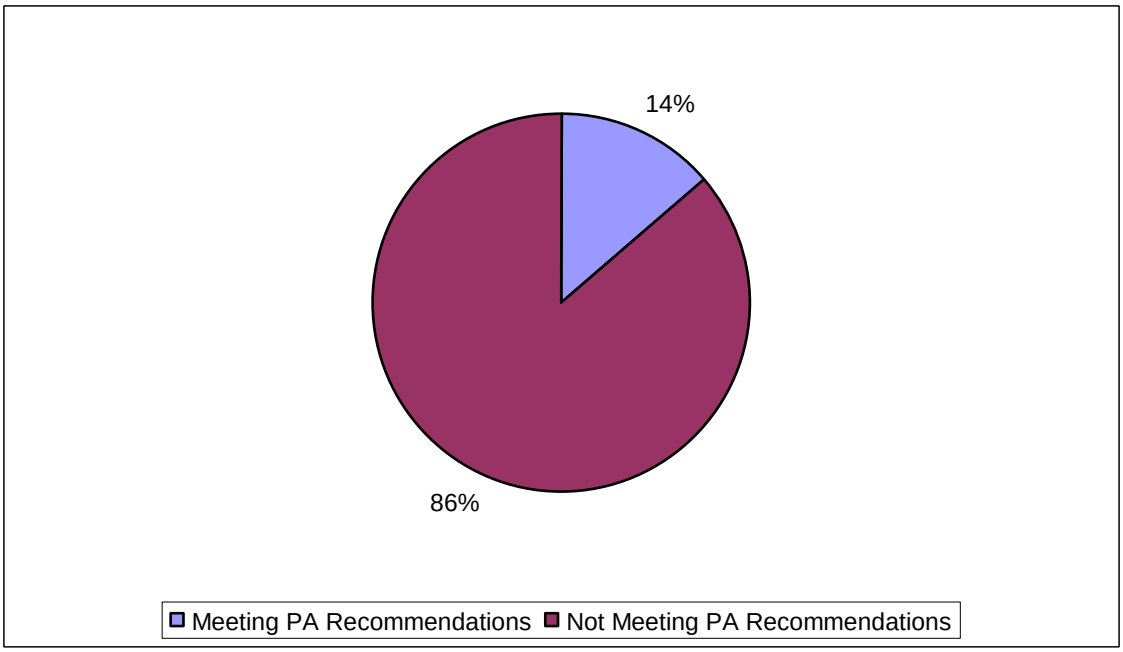


Figure 2: Percentage Meeting Current Physical Activity Recommendations

The percentage of participants who reported meeting the recommended ≥ 60 minutes MVPA over an academic year for 4 days per week was 88%, 68% for 5 days per week, 37% for 6 days to 14% achieving the recommendation daily (Figure 3).

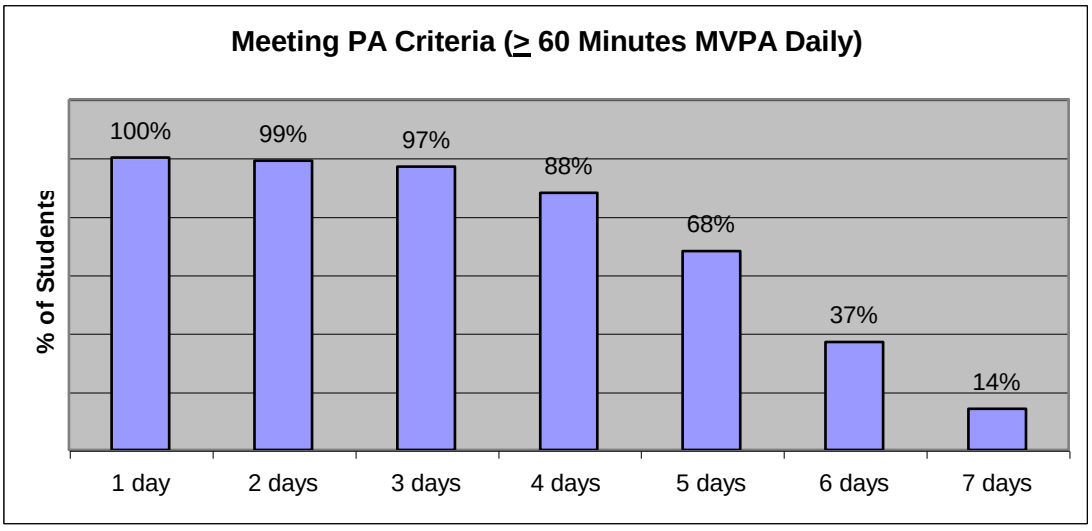


Figure 3: Meeting PA Criteria (≥ 60 minutes MVPA daily)

Habitual Physical Activity

On average, participants engaged in ≥ 60 minutes MVPA on 4.98 (± 1.21) days per week (Table 9). This self-reported participation pattern changed slightly at different time points to reveal higher levels of engagement at time 1 (Autumn) 5.09 (± 1.54) days per week, in comparison to 4.9 (± 1.45) days at time 2 (Winter) and 4.92 (±

1.45) days per week at time 3 (Summer). Figure 4 illustrates this difference, however, a repeated measures ANOVA across all three time points for average number of days ≥ 60 minutes MVPA per week was non-significant. Over the academic year, second year students reported a higher number of days per week ≥ 60 minutes MVPA (n=66, mean 5.12 ± 1.18) than third years (n=52, mean 4.77 ± 1.25) and first years (n=52, mean 5.02 ± 1.21). A one-way ANOVA showed no significant between year group differences.

Table 9: Mean (SD) Number of Days ≥ 60 Minutes MVPA a Week per Time Point

HPA	Time 1 (Autumn)	Time 2 (Winter)	Time 3 (Summer)	Year-Long
Mean(SD)	5.09 (1.54)	4.90 (1.30)	4.92 (1.45)	4.98 (1.21)

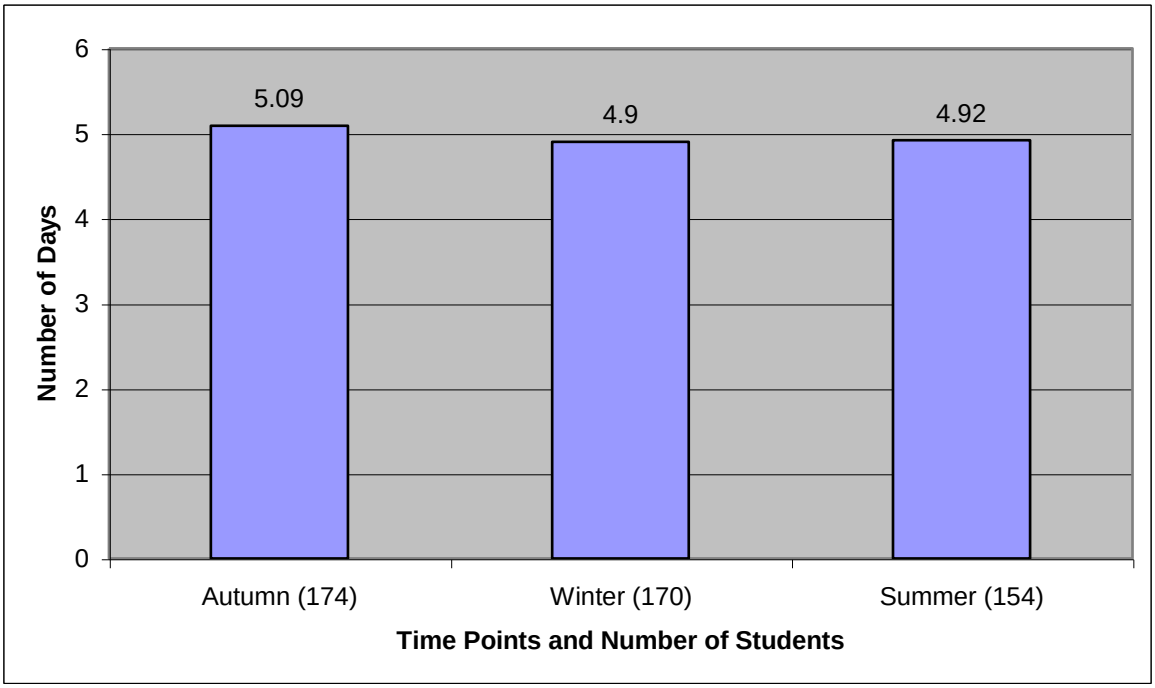


Figure 4: Average Number of Days ≥ 60 Minutes MVPA per Week

Pedometer Step Count

In order to achieve health benefits from PA, Tudor-Locke and colleagues (2004) established that the average age specific cut-off point for boys (aged 6-12 years)

should be 15,000 steps per day. They gave no figures for adolescent youth, only to predict that the amount of steps taken daily would decrease as adolescents moved through their adolescent years. For the current study, the average weekday and weekend day step counts at each time point and year-long were all below the recommended 15,000 steps per day target (Table 10). The amount of students meeting the Tudor-Locke's (2004) recommended number of daily steps was 14% (time 1), 20% (time 2) and 21% (time 3).

Overall, the year-long average daily step count recorded was 11,891 (+3,385). The average weekday (4 days, Monday-Thursday) step count at time 1 was 11,512 (+ 4,144), time 2 was 11,869 (+ 3,362) and time 3 was 12,299 (+ 4,656). The year-long average weekday step count was 12,043 (+ 3,561). The average weekend day (2 days, Saturday and Sunday) step count at time 1 was 10,490 (+ 4,402), time 2 was 11,121 (+ 4,061) and time 3 was 13,271 (+ 5,311). The year-long average weekend day step count was 11,782 (+ 3,844). These results are presented in Table 10. A paired samples t-test comparing year-long average step count for week day versus weekend day was non-significant.

Table 10: Means (SD) for Pedometer Step Counts per Time Point and Year-Long

	T1 (Autumn)	**T2 (Winter)**	**T3 (Summer)**	**Year-Long**
Pedometer step count				
- Daily	11,171 (3,964)	11,685 (3,211)	12,644 (3,385)	11,891 (3,385)
- Weekday	11,512 (4,144)	11,868 (3,362)	12,299 (4,656)	12,043 (3,561)
- Weekend day	10,489 (4,402)	11,120 (4,061)	13,271 (5,311)	11,781 (3,844)

The average daily step count at time 1 (Autumn) was 11,171 (± 3,964, N=146). Data from time 2 (Winter) was higher with an average daily step count recorded as 11,685 (± 3,211, N=96). Time 3 (Summer) showed a further increase in participants average daily step count of 12,644 (± 3,385, N=84), (Figure 5). A repeated measures ANOVA conducted across all three time points for average daily step count was significant F=(153, 2) 5.025, p<0.01 (greenhouse geisser and Huynh-Feldt). Post-hoc Bonferroni tests revealed that time 1 was significantly lower than both time 2 and 3, and that time 2 was significantly lower than time 3.

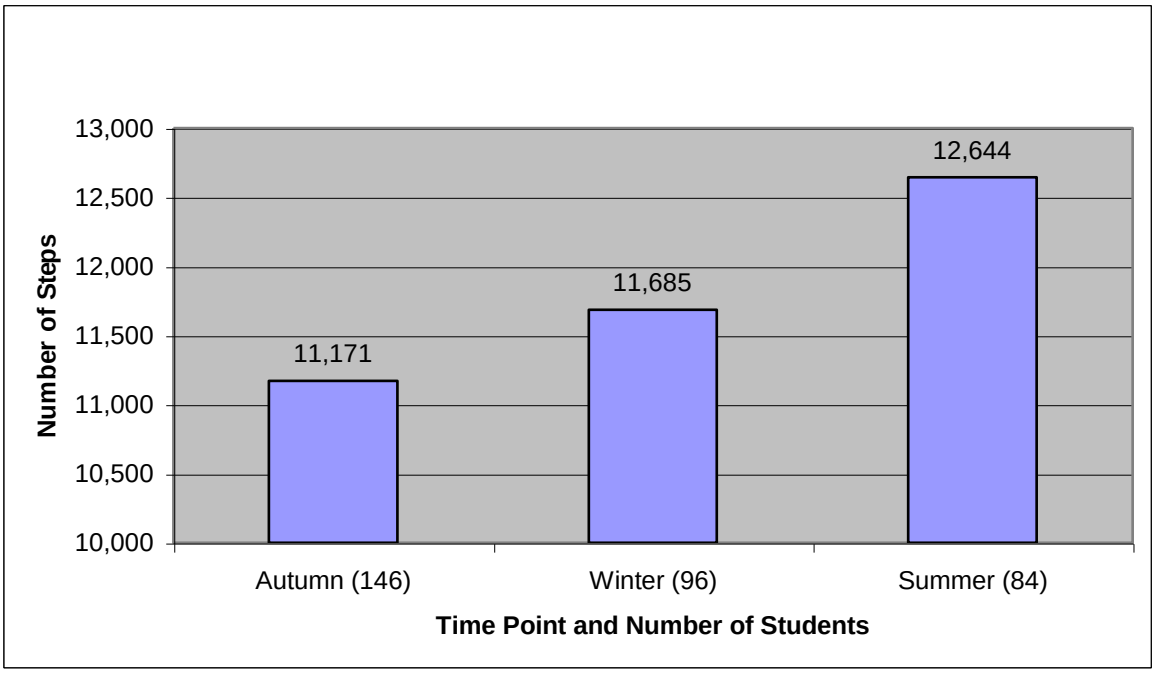


Figure 5: Average Daily step Count per Time Point

Figure 6 shows the year-long average daily step count for participants who completed pedometer step count diaries by each of the three year groups. Supporting the self-report data, second year students recorded the greatest average daily step count (12,526.3 ± 3,733, N=39) with a decrease shown from second year to third year (11,800.9 ± 3,222, N=32). First year students showed the lowest average daily step count (11,081.8 ± 2,851, N=27). A one-way ANOVA revealed no significant difference between the year groups.

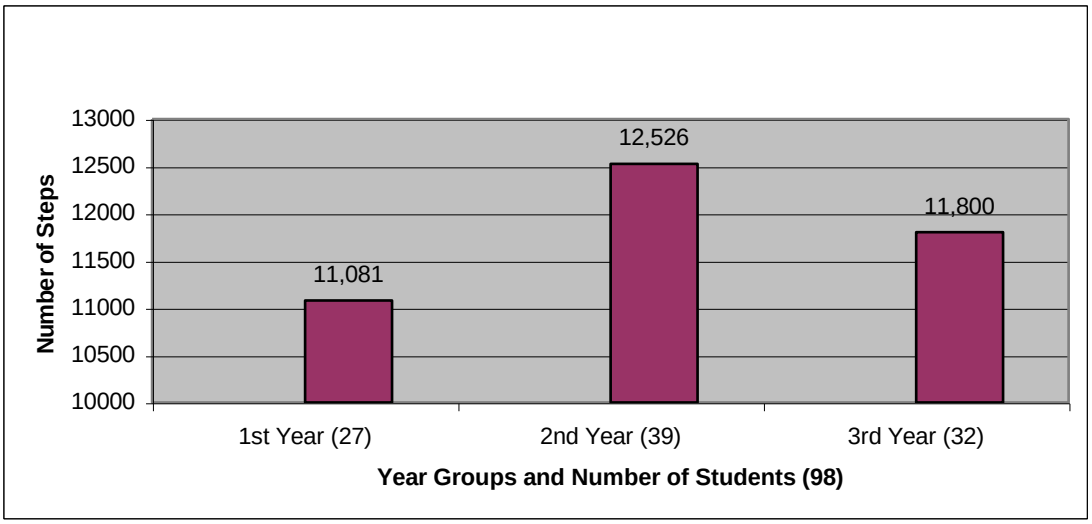


Figure 6: Year-Long Average Daily Step Count and Year Groups

Extra-Curricular Physical Activity (ECPA)

ECPA was defined for the students as the provision of activities outside of the formal PE curriculum, most often after school and at lunchtimes, but also in some schools, at weekends and/or before school. Student participation rate in ECPA was categorised as 'regularly' (≥ 2 per week), 'sometimes' (once a week) or 'never'. Year-long average ECPA participation rates revealed that the highest proportion of participants (n=73, 43%) 'regularly' engaged in ECPA at school on a weekly basis, 41% (n=70) reported 'sometimes' engaging in ECPA and the remainder of the participants reported to 'never' engage in ECPA (n=27, 16%). In summary, over 80% of participants indicated that they were 'regularly' or 'sometimes' involved in ECPA in school on a weekly basis (Figure 7).

Table 11: ECPA Participation per Time Point and Year-Long

ECPA Category	T1 (Autumn)	T2 (Winter)	T3 (Summer)	Year-Long
- Regularly	44%	46%	49%	43%
- Sometimes	40%	39%	33%	41%
- Never	16%	15%	18%	16%

Note: Regular (≥ 2 times a week), Sometimes (once a week).

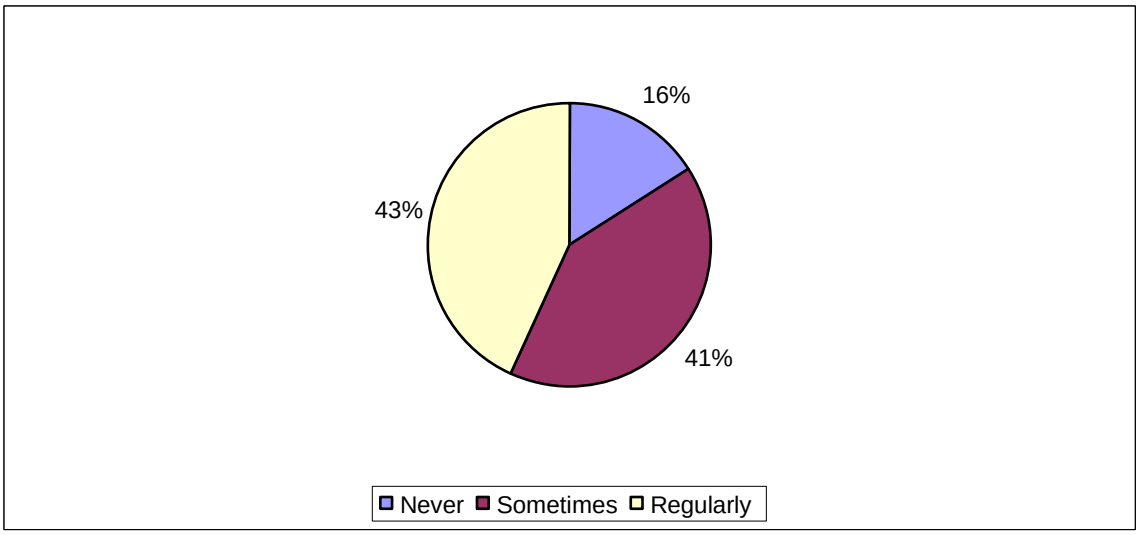


Figure 7: Year-Long ECPA Participation Levels

Figure 8 illustrates a reported consistently high level of participation in ECPA at each of the time points (Autumn, Winter, Summer) throughout the school year. Time 1 data showed that 44% of students reported participating 'regularly', 40% reported 'sometimes' participating and 16% reported 'never' participating in ECPA weekly. At time 2, 46% of students reported 'regularly' participating, 39% reported 'sometimes' participating and 15% reported 'never' participating in ECPA on a weekly basis. At time 3, 49% of students reported 'regularly' participating, 33% reported 'sometimes' participating and 18% reported 'never' participating in ECPA on a weekly basis (Figure 8). A Chi Square analysis by year group revealed no significant difference in ECPA participation frequencies between groups with 41%, 46% and 14% taking part 'regularly', 'sometimes' or 'never' in first year, 46%, 36% and 18% in second year and 42%, 42% and 16% in third year respectively.

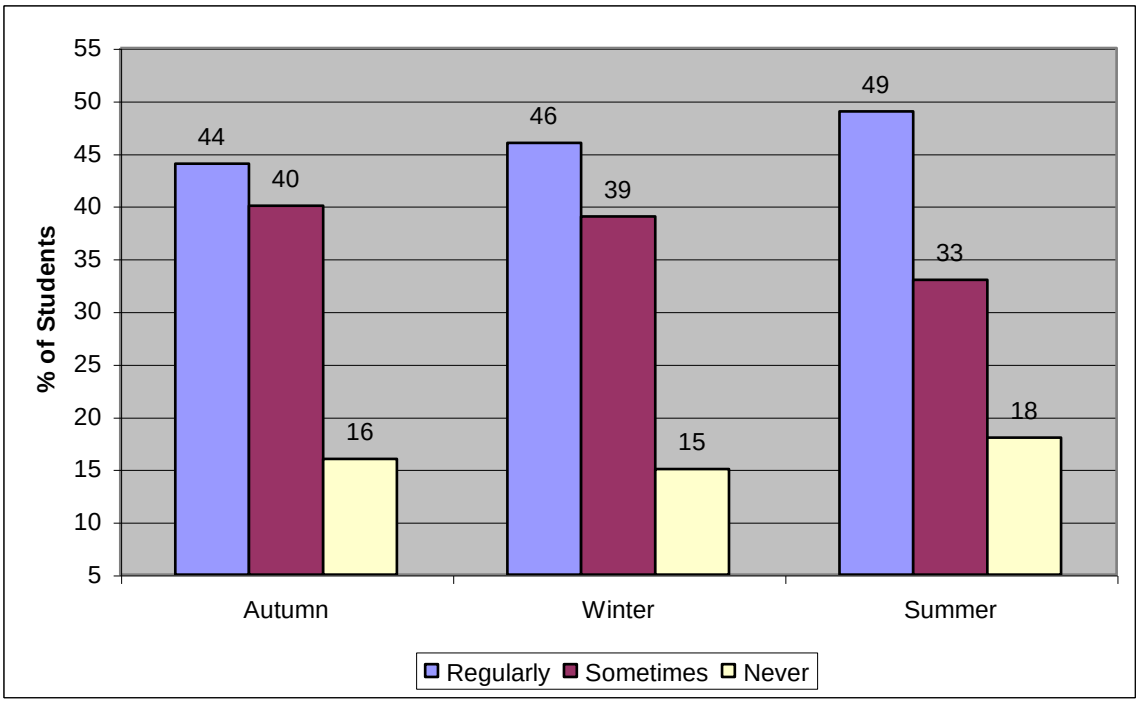


Figure 8: Average ECPA Participation Levels per Time Point

Most popular ECPA

The ECPAs participated in by students over the school year are illustrated in Figure 10. Football (71%), basketball (53%) and Gaelic football (50%) were consistently reported as the three most popular ECPA in terms of participation over the school year. Dance was not selected by any of the students, which was possibly due to the study focusing on adolescent males only. The only noted difference in participation levels over the academic year was in athletics, which revealed a 50% reported increase in ECPA participation from winter to summer terms (Table 12).

Table 12: Most Popular ECPA per Time Point and Year-Long (%)

ECPA	Time 1	Time 2	Time 3	Year-Long
Football (soccer)	66	75	73	71
Basketball	40	63	57	53
Gaelic Football	53	49	49	50
Table Tennis	31	48	37	39
Badminton	32	37	34	34
Boxing	16	29	29	25
Athletics*	**8**	**8**	**58**	**25**
Swimming	10	15	19	15
Judo	4	5	14	8
Hurling	8	7	6	7
Bouldering	2	2	1	2
Volleyball	2	2	3	2
Dance	0	0	0	0

Note: Time 1 (autumn, N=174), Time 2 (winter, N=170), Time 3 (summer, N=154)
*Note: Only significant difference in popularity was athletics at Time 3 – 58%, up 50% from Time 1 and 2.

All participants were asked to verify their level of participation in HPA at each time point. Responses revealed that at time 1 (Autumn, N=174) 73% (126/174) agreed that their reported frequency of HPA was correct, 17% indicated that they usually did more and 9% indicated that they usually did less. Similar responses were received at time 2 (Winter: N=169) with 76% (131/170) indicating frequency was correct, 18% indicating that they usually do more and 4% indicating that they usually do less. At time 3 (Summer: N= 153), 79% (121/154) indicated frequency was correct, with 16% indicating it was an underestimation and 5% indicating an overestimation of participation levels.

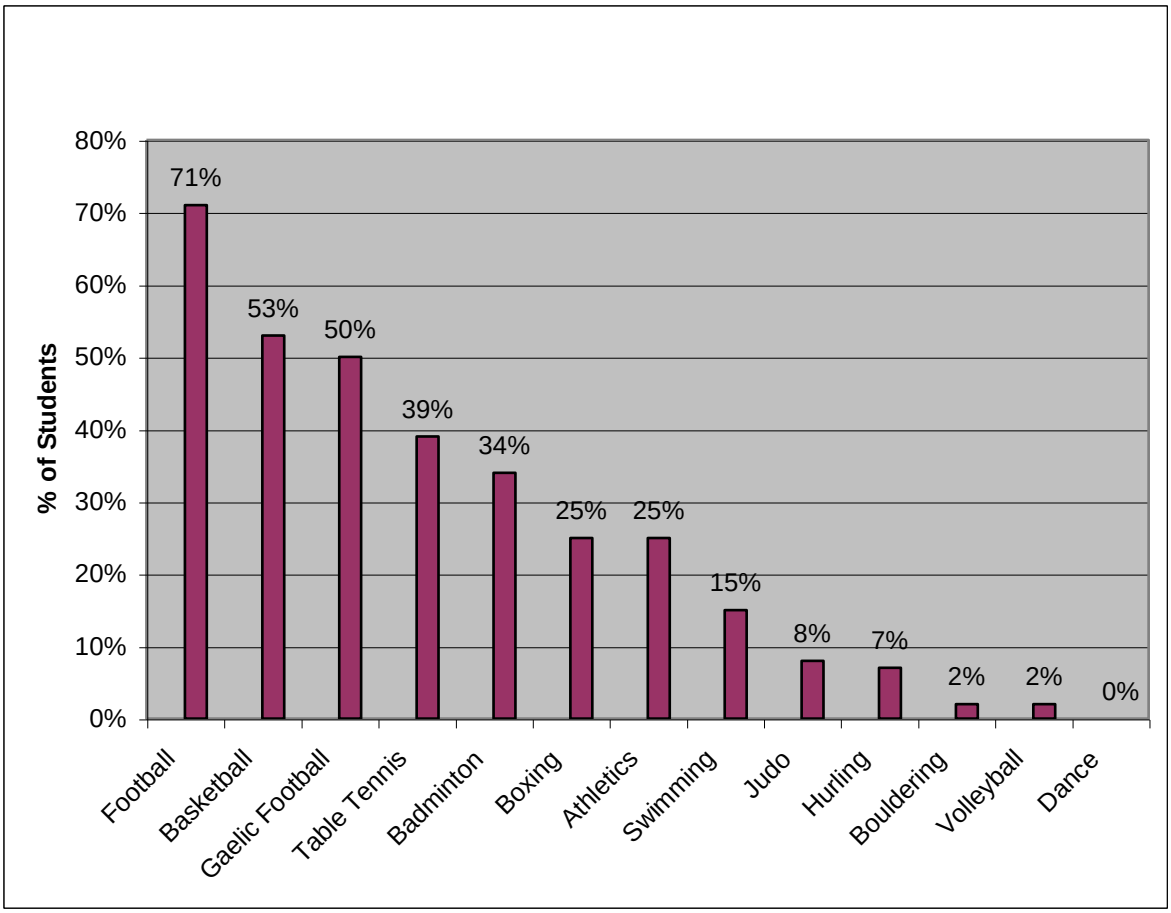


Figure 9: Most Popular ECPA

Barriers to Participation in ECPA

Individuals who reported 'never' participating in ECPA (N=27, 16%) were given a choice of four reasons for their lack of participation. The responses come under four main themes i) perceived competence, ii) lack of enjoyment iii) laziness iv) others. Perceived competence was the most frequent reason given for lack of engagement in ECPA, 'I don't think I'm good enough' (n=15, 56%). Laziness was the second most popular reason reported for 'rarely/never' engaging in ECPA, 'I'm too lazy' (n=5, 20%). Lack of enjoyment was the third most popular reason given for a lack of engagement in ECPA, 'I don't enjoy PA' (n=4, 13%). Participants were given the option of reporting their own specific reason for 'rarely/never' engaging in ECPA under 'others'. The responses (n=3, 11%) included 'no time', 'have to get home' and 'not liking the particular ECPA'. These results are presented in full in Table 13 and illustrated in Figure 10.

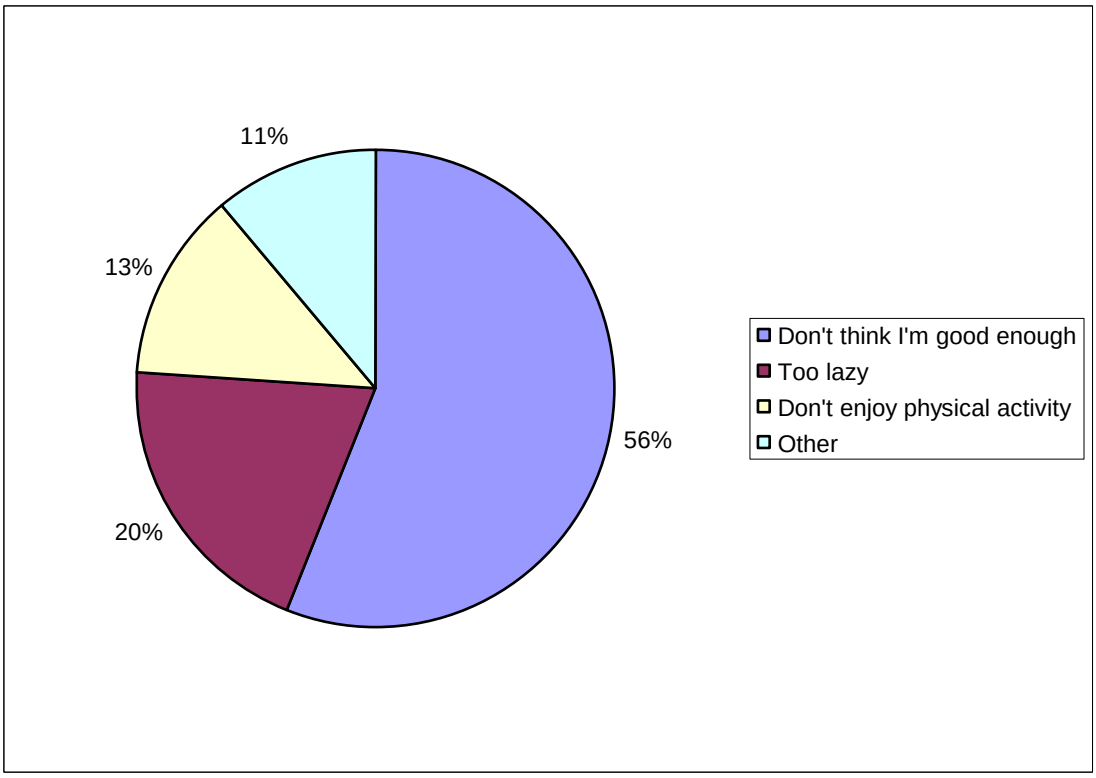


Figure 10: Reasons for Never Participating in ECPA

Table 13: Reasons for Never Participating in ECPA

Theme	% (n)	Categories
Perceived competence	56% (n=15)	I don't think I'm good enough
Laziness	20% (n=5)	I'm too lazy
Lack of enjoyment	13% (n=4)	I don't enjoy physical activity
Others	11% (n=3)	Lack of time Needed at home Do not like the particular ECPA on offer

Examining the Relationship Between ECPA, HPA and Pedometer Step Count

A significant ($p<0.01$) and acceptable ($r<0.5$) correlation was found between all three time points for each of the outcome measures HPA (number of days $\geq$ 60 minutes MVPA), ECPA and step count. This reveals consistent PA behaviour and self-reporting of this behaviour by the participants over time. For daily step count, the correlation between time 1 and time 2 was r=0.601, between time 2 and time 3, r=0.666, and between time 1 and time 3, r=0.688. For ECPA participation, the correlation between time 1 and time 2 was r=0.633, between time 2 and time 3, r=0.567, and between time 1 and time 3, r=0.806. For HPA, the correlation between time 1 and time 2 was r=0.645, between time 2 and time 3, r=0.459, and between time 1 and time 3, r=0.710.

Bivariate correlation analysis were employed to investigate the relationship between each of the outcome measures, HPA, ECPA and step count (daily, week day, weekend day). ECPA was significantly correlated to HPA ($r=0.457$, $p<0.01$). It was also related to daily (r=0.481), weekday (r=0.308) and weekend day (r=0.316) step count. HPA was significantly related to daily (r=0.407), weekday (r=0.243) and weekend day (r=0.320) step counts. All results were significant, however, correlation values between different types of measurement e.g. HPA vs daily step count, were only moderate (Table 14).

Table 14: Pearson Correlations Among Outcome Measures

Outcomes	ECPA	HPA	Daily Step Count	Wkday	Wkend day
ECPA	1				
HPA	.457**	1			
Step Count	.481**	.407**	1		
Wkday	.308**	.243**	.821**	1	
Wkend day	.316**	.320**	.789**	.731**	1

Note: **p<0.01, ECPA= Extra-Curricular Physical Activity, HPA = number of days $\geq$ 60 minutes MVPA, Wkday=Weekday (4 days), Wkend day=Weekend day (2 days)

The results from the year-long average HPA participation levels showed a positive trend when divided into ECPA categories (Table 14). A one-way ANOVA revealed a

significant between group difference among the three categories of ECPA participation (regularly, sometimes, never) and HPA ($F(2, 167) = 23.0$, $p<0.01$). Post-hoc Tukey tests revealed that the students who 'never' participated in ECPA had a lower mean number of days $\geq$ 60 minutes MVPA per week (3.85 $\pm$ 1.33) than those who 'sometimes' participated (4.89 $\pm$ 1.07) or 'regularly' participated (5.49 $\pm$ .98). A similar trend was observed with average year-long daily step count. A significant between group difference was also found for ECPA categories and pedometer step count ($F(2,95) = 14.56$, $p<0.01$). Post-hoc Tukey tests revealed that those who 'regularly' participated in ECPA had a higher mean daily step count (13821 $\pm$ 3546) than those who only 'sometimes' participated (11181 $\pm$ 2611) or 'never' (9312 $\pm$ 2551) participated (Table 15).

Table 15: Year-Long Mean (SD) for HPA and Pedometer Step Count by ECPA Category

	ECPA Categories			
	Never	**Sometimes**	**Regularly**	**Post-hoc**
HPA (N=170)	3.85 (1.33)	4.89 (1.07)	5.49 (.98)	**N<S, R; R>S**
Step count (N=98)	9311.8 (2551)	11180.8 (2611)	13820.7 (3546)	**N<S, R; R>S**

Note: P values set at 0.01 due to multiple comparisons.

4.3 Psychosocial data - Youth Physical Activity Promotion Model (YPAP)

This section examines student scores under each of the YPAP (Rowe, 2007; Welk, 1999) model subscales.

Within subject change over time

Over an academic year, the YPAP questionnaire was administered to the same students three times. A correlation analysis revealed that data on each subscale were highly correlated (all greater than $r=0.7$, $p<0.01$) over the three time points. The only exception was the subscale Fun of Physical Exertion (FPE), which had an r-value of 0.6 ($p<0.01$). The mean and standard deviation for each of the seven subscales, by time of year are shown on Table 16.

A repeated measures ANOVA was conducted across all three time points on each of the YPAP subscales. Only the Parental Encouragement (PE) subscale revealed significant difference, F=(154, 2) 4.420, $p<0.05$ (greenhouse geisser and Huynh-Feldt). Post-hoc Bonferroni tests revealed that there was a significant decrease in perceived parental encouragement for PA between time 1 and time 3. The remainder were non-significant.

Table 16: Means (SD) Scores for YPAP Subscales at Each Time Point and Year-Long

Outcomes	**T1 (Autumn)**	**T2 (Winter)**	**T3 (Summer)**	**Year-Long**
YPAP subscales				
(PSW)	19.1 (3.93)	19.49 (3.89)	19.34 (4.08)	19.32 (3.59)
(PPC)	20.91 (4.66)	20.91 (4.71)	20.43 (4.79)	20.89 (4.60)
(LGS)	17.34 (3.29)	17.29 (2.90)	17.08 (3.04)	17.26 (2.80)
(FPE)	15.36 (3.77)	15.04 (3.60)	14.95 (3.52)	15.15 (3.20)
(LVE)	15.71 (4.04)	15.62 (3.08)	15.20 (3.12)	15.47 (2.84)
(PA)	14.67 (3.55)	14.59 (3.45)	14.42 (3.51)	14.62 (3.20)
(PE)	**18.95 (3.75)**	18.45 (3.99)	**18.31 (4.20)**	18.54 (3.60)

Note: YPAP= Youth Physical Activity Promotion model, PSW= Physical Self-Worth, PPC= Perceived Physical Competence, LGS= Liking of Games and Sports, LVE= Liking of Vigorous Exercise, FPE= Fun of Physical Exertion, PA= Peer Acceptance, PE= Parental Encouragement

Bivariate Correlations between Outcomes and YPAP Subscales

Bivariate correlation analyses were used to examine the relationship between the behavioural outcome measures (HPA, ECPA and step count) and the YPAP subscales year-long average score (Table 17). Of the three outcome measures, ECPA had the highest correlation with all seven subscales. For example, the correlation between physical self-worth (PSW) and ECPA (r=0.611) was higher than with HPA (r=0.496) or step count (r=0.372). The correlation between perceived physical competence (PPC) and ECPA (r=0.677) was higher than with HPA (r=0.547) or step count (r=0.475). The outcome measures and the YPAP subscale scores were all significantly correlated ($p<0.01$).

Between the YPAP subscales, the highest correlations were found between PSW and PPC (r=0.828), showing a high degree of similarity between these two concepts. Liking of vigorous exercise (LVE) was also highly correlated to PSW (r=0.806) and to PPC (r=0.809), revealing a high degree of association between concepts tied to self worth and perceived competence and how an individual evaluates the level of liking of this activity. Acceptance by peers was highly related to PPC (r=0.878) and to the fun students indicated that they got from participating in PA (FPE: r=0.823). Not surprisingly, participants who indicated that the liked games and sport (LGS) also responded favourably to their liking of vigorous exercise (LVE: r=0.851) and to the fun they associated with physical exertion (FPE. R=0.779). These findings indicate that the subscales of the YPAP questionnaire are highly correlated, supporting the relationship between these psychosocial variables.

Table 17: Pearson Correlations between Behavioural Outcomes and YPAP Subscales

Outcomes	ECPA	HPA	Step Count	PSW	PPC	LGS	FPE	LVE	PA	PE
ECPA	1									
HPA	.457**	1								
Step Count	.481**	.407**	1							
Psychological										
Physical Self-Worth (PSW)	.611**	.496**	.372**	1						
Perceived Physical Competence (PPC)	.677**	.547**	.475**	.828**	1					
Liking of Games and Sports (LGS)	.619**	.513**	.447**	.798**	.797**	1				
Fun of Physical Exertion (FPE)	.530**	.430**	.438**	.714**	.784**	.779**	1			
Liking of Vigorous Exercise (LVE)	.605**	.503**	.467**	.806**	.809**	.851**	.867**	1		
Social										
Peer Acceptance (PA)	.579**	.452**	.408**	.771**	.878**	.776**	.823**	.812**	1	
Parental Encouragement (PE)	.433**	.377**	.386**	.500**	.523**	.577**	.498**	.536**	.519**	1

Note: **p<0.01, YPAP=Youth Physical Activity Promotion Model, ECPA= Extra-Curricular Physical Activity, HPA= Number of days $\geq$ 60 minutes MVPA.

Between subject comparison for Year long ECPA participation

Table 18 compares the five YPAP psychological subscales year-long average scores for students in the three ECPA categories (regularly, sometimes, never). Among all subscales, individuals who 'never' took part in ECPA scored lower than those who 'sometimes' or 'regularly' took part. This positive trend is illustrated in Figure 11.

Table 18: Year-Long Mean (SD) Scores for YPAP Subscales and ECPA Participation Categories

YPAP Subscales	Never (N=27)	Sometimes (N=70)	Regularly (N=73)	ANOVA	Post-hoc Tukey
PSW	14.94 (3.49)	19.19 (3.21)	21.08 (2.36)	$F(2,167)=43.4$, $p<0.01$	N<S, R; S<R.
PPC	14.88 (3.35)	20.30 (3.60)	23.49 (2.82)	$F(2,167)=71.0$, $p<0.01$	N<S, R; S<R.
LGS	13.33 (3.48)	17.48 (2.25)	18.51 (1.27)	$F(2,167)=57.2$, $p<0.01$	N<S, R; S<R.
LVE	11.79 (3.07)	15.50 (2.36)	16.81 (1.80)	$F(2,167)=48.0$, $p<0.01$	N<S, R; S<R.
FPE	11.46 (3.47)	15.18 (2.67)	16.49 (2.42)	$F(2,167)=34.0$, $p<0.01$	N<S, R; S<R.

*Note: PSW= Physical Self-Worth, PPC= Perceived Physical Competence, LGS= Liking of Games and Sports, LVE= Liking of Vigorous Exercise, FPE= Fun of Physical Exertion, R= Regularly, S= Sometimes, N= Never.

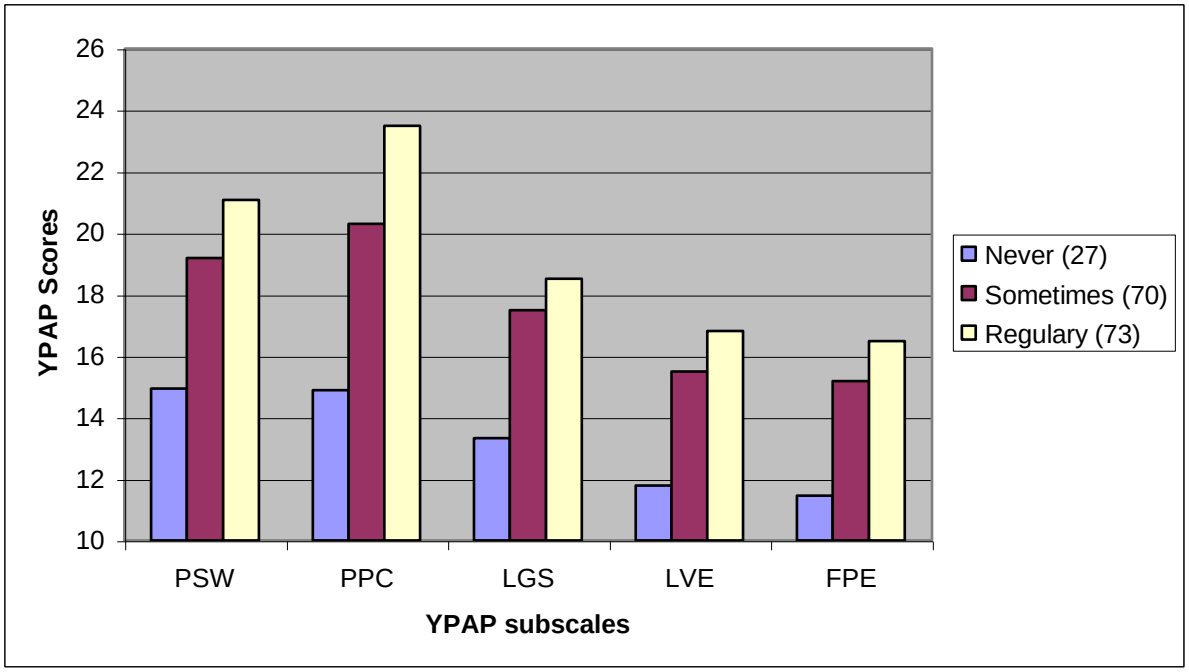


Figure 11: Average YPAP score in comparison to each ECPA participation level

Table 19 reveals the scores for the two psychosocial subscales (Peer Acceptance and Parental Encouragement) from the YPAP model. Again, as the level of ECPA participation increases, the higher the year-long average score on the YPAP subscale. Again, a positive trend is evident here (figure 12). All seven subscales from the YPAP model were found to be significant when compared with ECPA participation rates.

Table 19: Year-Long Mean (SD) Scores for YPAP Subscale and ECPA Participation Categories

YPAP Subscales	Never (N=27)	Sometimes (N=70)	Regularly (N=73)	ANOVA	Post-hoc Tukey
PA	10.88 (2.85)	14.44 (2.89)	16.18 (2.32)	F(2,167)=40.0, p<0.01	N<S, R; S<R
PE	15.26 (3.58)	18.53 (3.30)	19.76 (3.11)	F(2,167)=19.0, p<0.01	N<S, R; S<R

*Note: PA= Peer Acceptance, PE= Parental Encouragement, R= Regularly, S= Sometimes, N= Never.

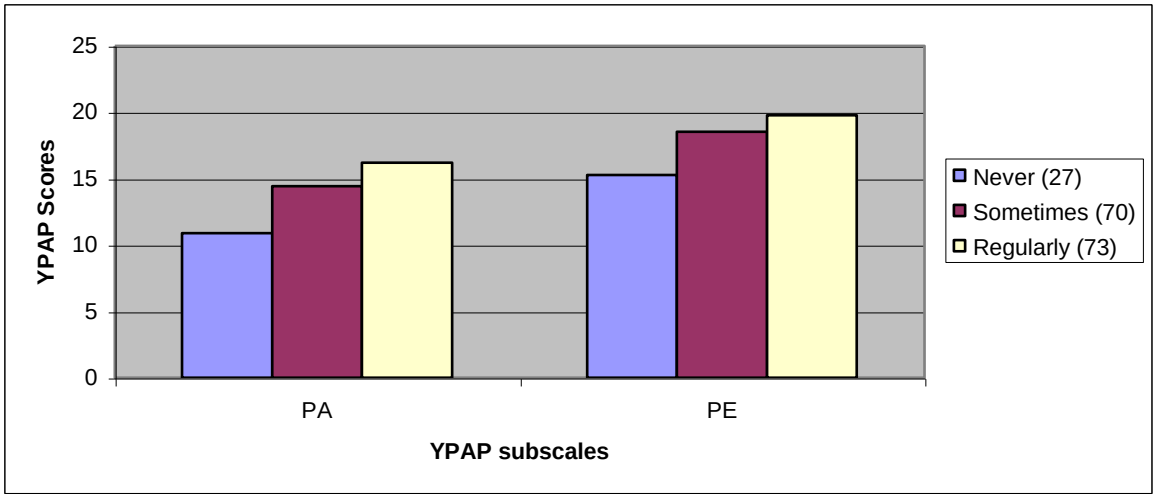


Figure 12: Average YPAP v Average ECPA

Regression Analysis to Predict ECPA Participation

A linear regression was performed with average year-long ECPA as the dependent variable. The demographic variables age and school, the behavioural measures (step count, self reported HPA) and all seven YPAP subscales were included as independent variables. The only two predictors of ECPA participation from all the outcome measures and the YPAP subscales were, in order of significance, perceived physical competence (PPC) and the school students' attended (Table 20). The results suggest that the school students' attend and what students think of their own physical ability, have a positive influence on their participation in ECPA.

Table 20: Regression Analysis to Predict ECPA Participation

Step 1	B	SE B	β
Constant	-.878	.725	
Demographic School	.107	.037	.177*
Psychological PPC	.102	.025	.622**

Note: *p<.05, **p<.001, controlling for age

4.4 Discussion on the Quantitative Data

4.4.1 Behavioural Data

Meeting Physical Activity Recommendations and Weekly HPA levels

i. *Meeting PA recommendations*

Regular physical activity (PA) in adolescence is important in developing their current and future health. This present study found that only 14% of the participants (males, aged 12-15 years) were meeting the current recommended PA guidelines for children and adolescents of ≥ 60 minutes MVPA daily (Department of Health and Children, 2009). This means that 86% of adolescents were not getting enough regular PA to develop their current or future health.

The Youth Risk Behaviour Surveillance survey (YRBS) in the US reported that only 18% of students (aged 14-19 years) had participated in ≥ 60 minutes of MVPA per day on each of the previous seven days (Eaton and colleagues, 2009). A Health Survey for England (2008) reported that 32% of males and 24% of females (aged 2-15 years) were meeting the CMO (2004) recommendation of ≥ 60 minutes of moderate PA daily, at that time (National Health Service, NHS, 2011). The Scottish Health Survey, 2009 (Ormstan *et al.*, 2010) revealed very high figures of 75% and 68% of males and females (aged 2-15) respectively, meeting the recommended guidelines, at that time, of 60 minutes moderate PA daily. Findings from the 2009/2010 HBSC Europe survey showed that 23% of 11 year olds met the guidelines of ≥ 60 minutes MVPA daily (WHO, 2010), while only 15% of 15 year olds met the guidelines (Currie *et al*., 2012).

Findings from the Take Part study (Woods *et al*., 2004) showed that 35% of students (aged 15-17 years) were meeting the recommended ≥ 60 minutes of MVPA 4 or more days per week (the recommended amount of PA for this age group at that time). The 2006 'Health Behaviour in School-Aged Children (HBSC, Ireland) study reported that 27% of children and adolescents (aged 10-17 years) were meeting the recommended PA

guidelines (Nic Gabhainn *et al.*, 2007). This figure has stayed fairly consistent as the HSBC, Ireland (2010) study reported 25% of children and adolescents (aged 10-17 years) were meeting the guidelines (Nic Gabhainn *et al.*, 2012). The CSPPA study (Woods *et al*., 2010) of Irish children and adolescents found that only 12% of the post-primary students in the study (aged 12-18 years) were meeting the recommended PA guidelines of $\geq$ 60 minutes MVPA daily.

In terms of meeting the PA recommendations, the amount of males (aged 12-15 years) meeting the guidelines (14%) is low. The figure, however, is fairly consistent with the amount of adolescents meeting the guidelines in the US (18% of 14-19 year olds, Eaton *et* al., 2009), Europe (15% of 15 year olds, Currie *et al*., 2012) and Ireland (12% of 12-18 year olds, Woods *et al*., 2010). The findings from the present study are difficult to compare with figures from the UK, as recommended guidelines at the time were lower than the present guidelines on PA. The low percentage of adolescents meting the recommended $\geq$ 60 minutes MVPA daily is cause for concern, worldwide, however, the figures reported may be an indication that the guidelines need reviewing and raise the question of how much PA is enough? The figures do highlight the importance of providing PA opportunities for adolescents and the need to make them as attractive as possible.

ii. *Number of Days $\geq$ 60 minutes MVPA*

The findings from the present study showed that, on average, participants engaged in $\geq$ 60 minutes MVPA on 4.98 days per week. In terms of year group in school, second years students reported the highest number of days per week $\geq$ 60 minutes MVPA (5.12), followed by first years (5.02) and third years (4.77). The amount of students that were participating in $\geq$ 60 minutes of MVPA 4 days per week was 88%.

The Youth Risk Behaviour Surveillance survey (YRBS, Eaton *et al*., 2009) in the US found that 45% of males (aged 14-19 years) participated in $\geq$ 60 minutes of MVPA on 5 or more days in the previous 7. The Take Part study (Woods *et al*., 2004) reported that 42% of male students (aged 15-17 years) were engaged in $\geq$ 60 minutes of MVPA 4 or

more days per week, while the 2006, HSBC Ireland study (Nic Gabhainn *et al.*, 2007) revealed that the amount of adolescents engaged in MVPA 4 or more times per week was 59% (aged 12-14 years) and 42% (aged 15-17 years). The 2010, HBSC Ireland study (Nic Gabhainn *et al.*, 2012) revealed that 51% of participants (aged 10-17 years) were engaged in ≥ 60 minutes of MVPA 4 or more days per week. The CSPPA study (Woods *et al*., 2010) found that, on average, participants (aged 10-18 years) met the daily MVPA guidelines on 4.0 days per week. The findings from the current study show that the students had relatively high levels of PA, even if the number of students meeting the recommended PA guidelines was low (14%). The amount of students engaging in ≥ 60 minutes of MVPA 4 days per week was extremely high (88%). This compares favourably with the amount of students engaging in ≥ 60 minutes of MVPA 4 or more days per week in other Irish studies, 42% of males from the Woods and colleagues (2004) study, 51% from the HBSC Ireland, 2010 study (Nic Gabhainn *et al.,* 2012) and 45% from the CSPPA study (Woods *et al*., 2010). Again, the findings from the present study highlight a positive PA outlook for the students involved. When comparing with these other studies however, it must be noted that they cannot be directly compared due to the other studies involving males and females, larger cohorts of students and a greater age range. The figures from these studies show that large numbers of students are being physically active every week, however, the low numbers meeting the recommended guidelines (≥ 60 minutes of MVPA daily) give a more negative outlook on their PA participation levels. Again, this asks the question of how much PA is enough for adolescents?

iii. *Age*

The present study highlighted third years as the least active year group of the three (4.77 days of ≥ 60 minutes of MVPA per week). Previous studies have found that a decrease in PA levels of adolescents with an increase in age is typical (Biddle *et al*., 2005; European Heart Network, 2001; Sallis *et al*., 2000; Van Der Horst *et al*., 2007).

The YRBS survey (Eaton *et al*., 2009) in the US found that there was a decrease in students meeting PA guidelines with increasing age (9^{th} grade – 39.7%, 10^{th} grade –

39.3%, 11th grade – 36%, 12th grade – 31%). The 'Scottish Health Survey, 2009 (Ormstan *et al*., 2010) also reported a decrease in PA with increasing age of children and adolescents (aged 2-15 years) with 80% of male participants (aged 5-12 years) meeting recommended PA guidelines, falling to 70% of males (aged 13-15 years).

In Ireland, a drop in adolescent PA participation with increasing age is also common. The HBSC Ireland (2006) study (Nic Gabhainn *et al*., 2007) found a decrease in the number of students getting $\geq$ 4 days 60 minutes MVPA in the previous week ranging from 64% (aged 10-11 years) down to 42% (aged 15-17 years). The more recent HBSC Ireland (2010) study (Nic Gabhainn *et al*., 2012) again revealed a decrease in the number of students getting $\geq$ 4 days 60 minutes MVPA in the previous week falling from 62% (aged 10-11 years) to 41% (aged 15-17 years). The CSPPA study (Woods *et al*., 2010) found similar decreases in PA participation in adolescence with the amount of male students meeting the PA guidelines dropping from 24% (aged 12-13 years) to 16% (aged 14-15 years) to just 7% (aged 16-18 years).

The decrease in the amount of adolescents physically active with increasing age is a worrying trend and reflects the negative attitude of many adolescents towards physical activity, as they get older. The most dramatic decrease in PA seems to come around the 15 years of age category. This would generally be students in third year of post-primary school in Ireland. The present study is no different with third years reporting the lowest average number of days (4.77) $\geq$ 60 minutes of MVPA per week. First years reported 5.02 days of $\geq$ 60 minutes of MVPA per week and second years were the most active, recording 5.12 $\geq$ 60 minutes of MVPA per week. The jump in PA participation in this study from first to second year is uncommon, however, the difference is quite small. The decrease in PA with increasing age in adolescence is significant and highlights the importance of finding out why this drop-off in PA is so common. Future research needs to investigate the attitudes and views of the students, particularly around the ages of 14 and 15 to find out what is causing the decrease in PA participation and what, if anything, can be done about it. Focus group discussions should be the most productive method of finding out the honest opinions of adolescents and the focus group discussions from the

present study into ECPA participation might provide some insight into adolescent males attitudes to PA and barriers to involvement.

Comparisons across studies and countries should be interpreted cautiously due to differences in cohort size, age range of participants, recommended amount of PA for young people and measurement procedures. The need for a standardised adolescent PA guideline is clear and would make comparisons across countries much easier. The majority of the studies were self-report and the wide range of findings from the different studies highlights the limitations of this PA measuring method. The studies were predominantly cross-sectional as opposed to longitudinal. The present study is longitudinal in nature and therefore, has the advantage of being able to track the PA behaviour of adolescents over a period of time rather than a one off snapshot, providing stronger validity to its findings. The standout trends are that levels of physical activity decline in adolescence with increasing age and males tend to be more active than females (Nic Gabhainn *et al.*, 2007, 2012; Woods *et al*., 2010. A limitation of this study is the focus on male adolescents' only. However, more single gender studies need to be undertaken to allow direct comparisons of studies that much easier. The discussion has highlighted that adolescents' PA levels are not that low, however, the recommended guidelines of $\geq$ 60 minutes MVPA daily seem to be out of reach for many. This may suggest that the amount of PA that adolescents may be participating in on the days that they are active is not being taken into account. This highlights one of the drawbacks to self-report questionnaires where participants can only answer what they are asked. Therefore, the need for objective measures, such as motion sensors, of PA in adolescence or a combination of self-report and objective measures is clear. This present study looks at a combination of self-report, objective and focus group discussion to identify accurate and reliable information from adolescent males regarding PA and ECPA participation.

Pedometer Step Count

In the present study, participants recorded an average year-long daily step count of 11,891. This figure is well below the recommended cut-off point for males (aged 6-12 years) of 15,000 steps per day (Tudor-Locke *et al*., 2004). Canada's Health and Physical

Activity Guide (2009) recommends a cut-point of 16,500 steps daily for boys and girls. As cut-off points for adolescents have yet to be established, it is difficult to compare step count results from this study to the recommendations. The best comparisons can be made with studies that have measured the daily step counts of children and adolescents. The Canadian Fitness and Lifestyle Research Institute randomly recruited N=11,669 children and adolescents (aged 5-19 years) to take part in pedometer measurement. The study found that males took 12,259 steps daily, while females took just 10,906 steps daily. Abbott and Colleagues (2009) study of Australian children and adolescents (N=2,076, aged 5-17 years) found that average weekday daily step count for Year 10 students who walked to school was 13,592 for males and 12,109 for females. The study reported that the figures decreased for students who got non-active transport to school. Dollman and colleagues (2010) study with Australian children and adolescents (N=2,071, aged 5-16 years) reported that males (aged 5-12 years) had a daily step count average of 13,501 and older males (aged 13-16 years) had an average daily step count of 11,150. The average daily step count from the present study (11,891) compares quite favourably with the averages from the other studies. Again, it is difficult to make direct comparisons due to the differences in cohort size and the age range of students. The lack of an accurate figure on how many steps is enough for adolescents makes a stronger case for a combination of self-report and objective measures when assessing PA in adolescence.

Students in this study recorded a year-long average weekday (4 days, Monday-Thurs) step count of 12,043, while the average weekend day (2 day average) step count was 11,781. The year-long average daily step count at Time 3 (Summer, 12,644) was significantly higher than at Time 1 (11,171) and Time 2 (Winter, 11,685). In terms of year groups, second year students had the highest year-long average daily step count (12,526), followed by third years (11,800) and first years (11,081). The high number of daily steps recorded from the second year students is consistent with the results from the self-report $\geq$ 60 minutes MVPA daily results showing second years as the most active group. However, third year students reported higher daily step counts than first year students, which is opposite to the number of days $\geq$ 60 minutes MVPA weekly, where first years (5.02) reported to be more active than third years (4.77).

Abbott and colleagues (2009) study found that weekend day step counts were lower for year 10 students than week day step counts. Males recorded, on average, 12,168 steps per day on the weekend and 13,952 on a weekday. Females recorded 12,109 steps on a weekday and 10,787 steps on average, per day on the weekend. The Dollman and colleagues (2010) study also reported higher average step counts by students on weekdays than on weekend days. For males, 12,926 was the average step count for a weekday and 11,793 for a weekend day. For females, the corresponding step counts were 11,031 and 10,179. The findings point to a higher level of steps taken by males than females, which is in line with the self-report data that males are more active than females in adolescence (Fahey *et al*., 2005; Nic Gabhainn *et al*., 2007/2012; Woods *et al*., 2010). Tudor-Locke and colleagues (2004) do suggest that the cut points should decrease as children move through adolescence, as adolescents decrease their PA participation as they get older. The studies referred to in this discussion have been consistent with this view (Abbott *et al*., 2009; Dollman *et al*., 2010). The present study shows found that, as previously mentioned, that second years recorded the highest average daily step count, followed by third years and then first years. This goes a little bit against normal step count trends i.e. a decrease in step count with age, but it may be due to the study being focussed on males only, and the small cohort of students involved. The findings from the studies showed that the participants were more active on weekdays than weekend days. Again, this may give strength to the notion that adolescents are less inclined to be active on the weekends. If this is the case, it demonstrates how big an opportunity the school day is in terms of getting adolescents physically active. This could come in the form of more PE, a greater availability of ECPA or just generally promoting PA during the school day.

The lack of clear step count cut-off point recommendations is an area of concern when using pedometers to measure adolescent PA levels. Dollman and colleagues (2010) alluded to this problem, reporting that no studies could be located that had proposed pedometer step thresholds for older adolescents (>12 years). Given that various studies have found that PA levels tend to decrease in young people as they move through

adolescence (Fahey *et al*., 2005; Nic Gabhainn *et al*., 2007; Woods *et al*., 2010), it is vital that a recommended figure for daily step count in adolescence is identified.

In order to deal with the problem of reduced PA levels with increasing age in adolescence, it must first be identified at what point the decrease begins. Cross-sectional studies are useful guides for analysing step count in young people, but only at a particular time. In terms of tracking the regular daily or weekly step counts of adolescents, longitudinal studies are vital. To gain a greater insight into when the step count averages begin to decrease in adolescence, longitudinal studies must become commonplace in this research field. The strength of this study is that it measures the daily step count of adolescent males across an entire academic year, giving a broader analysis of the PA levels of students at different stages of the school year. Typically, time 3 (Summer) recorded the highest average daily step count (12,644). The results from the study suggest that students are relatively active throughout the year, yet a lack of clear recommendations for this age group means this assumption is questionable.

In order to observe gender differences, a similar study to this present one needs to be carried out with females to see how they would compare with males of a similar age (12-15 years) in terms of daily step count and year group/age. Longitudinal research would also be recommended with a cohort of adolescents over the course of their post-primary school years to track step count levels with increasing age.

Extra-Curricular Physical Education (ECPA)

This section will discuss the role of ECPA in post-primary schools under the following headings i) levels of ECPA participation ii) most popular ECPAs and iii) barriers to ECPA participation.

Levels of Participation

This study has found that year-long participation levels in ECPA for this group of students is high (84% at least once a week). This total included the majority of students (43%) who reported to participate on a regular basis throughout the school year ($\geq$ 2 per

week). These levels of ECPA engagement show a consistent pattern across the three time points and all three year groups. The results are positive. In the UK, a 'Young people and sport in England' survey (2002) reported that 72% of post-primary students were participating in ECPA once or more per week (Sport England, 2003, b). The same study also found a decrease in ECPA participation levels as students moved through adolescence, 43% (years seven to nine, aged 11-14 years) to 35% (years ten to eleven, aged14-16 years). A study in Wales the 'Active young people' survey (Sports Council Wales, 2006) found that 67% of post-primary students were participating in ECPA once or more per week. The same survey also reported a decrease in the amount of students participating in ECPA with an increase in age. Smith and colleagues (2007) found that among English, adolescent, male students (aged 15-16 years), 3% participated in ECPA four or five times a week, 30% reported involvement three or four times a week, 40% took part in ECPA twice a week, while 26% took part once a week. The results from the UK are difficult to directly compare with the present study due to differences in gender, age and cohort size and design methodology (cross-sectional versus longitudinal). However, in terms of the number of students engaging in ECPA participation at least once a week, the present study compares favourably.

From an Irish perspective, Fahey and colleagues (2005) reported that 22% of post-primary students (male and female) never participated in ECPA. In the case of males only, they found that 16% of students never participated. The CSPPA study (Woods *et al*., 2010) findings also showed that 16% of post-primary students (males and females) never participated in ECPA. However, in the case of male students only, the CSPPA study found that only 11% never took part in ECPA. The present study findings (16% non-participants) would indicate that this number has stayed consistent over the years. However, the 11% of males from the CSPPA study is a low figure compared to the 16% of non-participants from the present study. This difference among studies may be explained by the focus of the current study on adolescents in disadvantaged schools or due to the fact that the present study looked at only junior cycle, whereas, the Fahey and colleagues (2005) and Woods and colleagues (2010) studies included both junior and

senior cycle students. Research has shown that children from disadvantaged backgrounds are less likely to participate in community based PA or sport (Woods *et al*., 2010).

In terms of year groups, Fahey and colleagues (2005) found a decrease in students' ECPA participation levels as they moved up through the years in post-primary school. The non-participation levels for second and third years were 15% and 20% respectively. The CSPPA study revealed a similar decrease with increasing year in school, as non-participation levels were 12% (first year), 14% (second year) 18% (third year). The current study showed varied non-participation levels in ECPA from first year (14%) to second year (18%) to third year (16%). The first indications of a real increase in non-participation are from second to third year in both the Fahey and colleagues (2005) study (15% to 20%) and the CSPPA study (14 to 18%). This may be an area that could be targeted for future research to see what it is that encourages more adolescents to be involved in ECPA and PA at this stage of adolescence and to try and track the general decline in PA participation as they get older. The decrease in adolescent ECPA participation levels with an increase in age is consistent with many studies highlighting a decrease in adolescents PA behaviour, as they get older (De Roiste and Dineen, 2005; Sallis *et al*., 2000; Twisk, 2001; Van Der Horst *et al*., 2007). A challenge for interpretation of the findings from the current study is the tendency by researchers to report on adolescent PA rather than divide into males and female. Gender differences exist in adolescent participation levels, females are known to be less active than males (Fahey *et al*., 2005; Woods *et al*., 2010), so gender specific findings are necessary, for both males and females in order to fully understand this cohort.

Most Popular ECPAs

The three most popular ECPAs participated in by students over the academic year were football, basketball and Gaelic football. The findings showed that they were consistently popular across throughout the whole year, being the top three at time 1 and time 2, and all in the top four at time 3. These results highlight the domination of invasion games in on offer to students in this study. The only ECPA that was not selected by any of the students was dance. The fact that this study included male students only may be a

possible reason for this finding. Findings from ECPA studies and adolescents in the UK are in line with the findings of the present study. The Sport England (2003b) survey reported a domination of invasion games on offer in ECPA, with football (15%) and netball (7%) the most frequently attended by males and females respectively. Smith and colleagues also highlight the domination of invasion games in ECPA, reporting in their study that the most widely played sports were, again, football (52%) and netball (24%). The Women's Sport and Fitness Foundation (WSFF, 2011) report focussed on why girls in the UK (primary and post-primary) turn away from an active lifestyle. The report showed that girls believed PE and school sport was dominated by traditional, competitive sport and targeted the sport and talented students. The same report suggests that traditional sport remains the focus of policy and delivery of PE in England.

Studies have shown that ECPAs in Irish post-primary schools are also dominated by invasion games. Fahey and colleagues (2005) found that soccer (28%) and Gaelic football (22%) were the most popular ECPAs for males and basketball (20%) and Gaelic football (12%) were the most popular for females. The CSPPA study (Woods *et al*., 2010) found similar results with a dominance again by invasion games in terms of ECPA participation. The same study reported soccer (17%), Gaelic football (12%) and basketball (9%) as the most popular for males. For females, basketball (14%), Gaelic football (12%) and athletics (9%) were most popular. The domination of traditional, invasion games correspond with the suggestion that PE in Irish post-primary schools is also dominated by traditional, invasion games (Fahey *et al*., 2005; Woods *et al*., 2010). Both studies alluded to the difference between what was on offer in PE classes and the multi-activity approach outlined in the physical education syllabus (DES, 2003). The studies made reference to the limited amount of exposure students have to possibly more individual activities in PE such as dance and swimming. The finding of athletics as the third most popular ECPA for girls in the CSPPA study (Woods *et al*., 2010) suggested that the attraction of athletics might be due to the availability of individual events. The present study found that athletics was the only PA that showed any real difference in popularity during the school year (T1, 8%; T2, 8%; T3, 58%). This may be down to

athletics being a summer term PA, however, it may give an indication that boys who are not keen on traditional games have an opportunity to engage in a more individual PA.

The findings from this present study and the Fahey and colleagues (2005) and Woods and colleagues (2010) studies highlight the popularity of traditional, invasion game within ECPA. It is within reason to suggest that the main ECPAs on offer in post-primary schools are traditional, invasion games. This is an area that needs more attention. If more of our adolescents are to become more physically active, by way of ECPA participation, a greater variety of physical activities must be available to them. The availability of invasion games in ECPA is obviously very important in terms of attracting students to participate, but more opportunities in terms of less competitive, individual physical activities may be a worthwhile experiment. This will, however, require more time and effort from PE teachers in particular therefore, other members of school staff or parents may need to get involved.

Barriers to ECPA participation

From the options given to the students who reported to never participate in ECPA (16%), the most frequent reason given was 'I don't think I'm good enough' (56%). This lack of perceived competence was the most consistent reason given for a lack of ECPA participation across all three time points throughout the academic year. Lack of perceived competence was followed by 'too lazy' (20%), 'lack of enjoyment' (13%). The other 11% of non-participants gave reasons such as 'no time', 'have to get home' and 'not liking the particular ECPA'. The understanding of why students are not taking part in ECPA is crucial in order to develop strategies to increase participation levels. A comparison with barriers to PA and PE participation has been identified. In terms of barriers, the Women's Sport and Fitness Foundation report (WSFF, 2011; 1500 children surveyed) found that the reasons were being put off sport and PA because of their experiences of school sport and PE, not liking the activities they do in PE, too much competition in PE and not feeling they had the skills to do well in sport. McCarthy and Jones (2007) study on children (aged 7-12 years) concluded that one of the main non-enjoyment sources of sport for came from demonstrating a lack of competence. Allender

and colleagues (2006) reviewed qualitative studies investigating an understanding of participation in sport and PA in children and adults. This review concluded that self-perception is incredibly important in motivating people to participate in all types of PA (Allender *et al*., 2006). For adolescent females, the review revealed that barriers to participation included negative experiences during school PA and PE, being unable to demonstrate competency of a skill to peers in class also made people uncomfortable in PE.

De Roiste and Dinneen (2005) looked at the participation patterns and preferences of Irish adolescents in relation to PA. The questionnaire based study took place between November 2004 and February 2005. The students involved (N=2260, 1022 males/971 females, aged 12-18 years) were from schools (N=51) all across the Republic of Ireland. The findings showed a significant decline in sports involvement with age, however, with participation rates dropping from 96% of 12 year olds to 77% of 18 year olds. The study found that the most common reason for dropout from an activity was a loss of interest. The same study also reported not liking the leader and not having a good enough skill level as other reasons for dropout. Fahey and colleagues (2005) study found that a major negative about sports participation for post-primary students was 'being left out for not being good enough'. One third of students either 'minded this a lot/minded this a bit'. Fahey et al. suggested that the risk of being excluded in sport is a major negative, from an overall positive perception of sports participation. Woods and colleagues (2010) found in the CSPPA study that the main reasons for male non-participation in PA were being injured, time pressure and feelings of incompetence. For females, the reasons included time pressure, feelings of incompetence and just not liking sport. The one barrier to non-participation that crosses over all these studies and reviews is a lack of perceived competence. This corresponds to the current study from the self-report questionnaire results. The qualitative results will discuss the findings on the barriers to ECPA participation from the focus group discussions with students who reported to 'never' participate in ECPA.

Examining The Relationship Between ECPA, HPA and Pedometer Step Count

Both self-report and objectively measured PA showed low numbers of children meeting the current recommended PA guidelines for children and adolescents of > 60 minutes MVPA daily (Department of Health and Children, 2009). This is a public health concern as PA is related to current and future health (Department of Health and Children, Ireland, 2009; WHO, 2003). Activity patterns were consistent throughout the year, suggesting that interventions need to be year-long, for example, targeting high frequency activities like active school transport to increase daily minutes of PA (Department of Transport, Smarter Travel, 2009) or by using structured exercise or sport opportunities such as ECPA, to increase daily PA minutes in adolescents.

Results showed that HPA ($\geq$ 60 minutes MVPA daily) and daily step count levels both increased with an increasing participation rate in ECPA. Post-hoc Tukey tests revealed that the students who regularly participated in ECPA had higher recorded HPA levels and step count levels than those who only sometimes or never participated. This reveals the potential value of ECPA participation in helping adolescents to achieve the recommended daily PA guidelines ($\geq$ 60 minutes MVPA) and shows that taking part in ECPA, even once a week can have a significant, positive effect on their HPA levels. Recent studies have found that being involved in ECPA increased the likelihood of adolescents meeting the recommended daily PA guidelines (Silva *et al*., 2010; Woods *et al*., 2010). The findings of the current study support this view.

4.4.2 Psychosocial Data

This section will discuss the relationship found between psychological well-being, as measured by the YPAP model (Rowe *et al*. 2007; Welk, 1999) and the behavioural outcomes of this study (ECPA, HPA, step count) over an academic year. The subscales of the YPAP based questionnaire were highly correlated, this is expected as the factors that influence participation in games and sport from a psychological perspective, for example, physical self-worth and perceived physical competence have commonality.

Additionally, research has shown that children who perceive they are good at sport and PA like it more (Allender *et al*., 2006; Hilland *et al*., 2011).

A Repeated measures ANOVA was conducted across all three time points on each of the YPAP subscales over the year-long study period. No significance was found in any of the subscales apart from perceived parental encouragement. This scale assessed how children perceived the support they received from their parents for engagement in sport and games over the duration of the school year. It was developed by Brustad (1996) who believed in the importance of parent's social support. Sallis and colleagues (2000) review of studies into the correlates of PA reported that social support from parents was strong in adolescents and suggested that parents still have a important role to play in the PA behaviour of their teenagers, and should be supported by parents, verbally or otherwise. Wenthe and colleagues (2009) looked at the relationship between YPAP factors and MVPA in adolescent males and females. Family support demonstrated the strongest and most consistent relationship with males and females MVPA. They suggest the prominence of parental support as a PA behaviour factor. Friend support also had a significant correlation with MVPA of the male students. In this study, perceived parental encouragement for games and sport decreased over the duration of the study. The score obtained at autumn was significantly lower than at summer time. The reasons for this are unclear, and explanations were sought in the qualitative data collected by the participants at this time (discussed in chapter 5). However, research suggests that parental encouragement is important (Biddle *et al*., 2005; Van Der Horst *et al*., 2007). A possible hypothesis might be that the current study raised expectations among the adolescent males as to what their parents should be providing and hence their reported expectations in light of no change from parents were evaluated less positively. A similar finding was reported by Brown and colleagues (2013) in their KAPS study, an intervention targeting the mediators of children's PA. Future research needs to investigate the influence of data collection and awareness raising exercises on child evaluation of parental encouragement.

Results formed a clear linear pattern showing that an increase in ECPA participation level correlated with an increase in psychological well-being. In fact, participation in ECPA

was more highly correlated with the YPAP subscales than either step count or self-reported HPA. This is probably due to the narrow range of variance in responses to ECPA as opposed to any substantial difference. However, it does show that there is a significant relationship, observed over a full academic year, between participation in ECPA on a regular basis and an adolescent males' psychological well-being. This pattern was repeated across all five psychological subscales (perceived physical competence, physical self-worth, liking of games and sports, liking of vigorous exercise, fun of physical exertion) targeted from the YPAP model. It provides evidence that male adolescents who participate in ECPA have a more positive evaluation of factors that may affect their psychological well-being than those who do not participate.

Perceived physical competence has been identified as extremely important in maintaining involvement in PA (Bandura, 1997; Fox, 2000; Horn and Harris, 2002). Studies have shown that perceived physical competence was highest in adolescents who were the most physically active (Paxton *et al*., 2008; Inchely *et* al., 2011; Telama *et al*., 2005). Higher levels of physical self-worth have also been found to correlate with higher levels of PA in youth (Altintas and Hulya Asci, 2008; Biddle *et al.,* 1999; Inchely *et* al., 2011). It is unsurprising that the two subscales of perceived physical competence and physical self-worth are linked to higher ECPA participation levels in adolescence as they had a highly significant between subscales correlation.

Enjoyment of ECPA participation was examined under the YPAP subscales, liking of games and sports (LGS), liking of vigorous exercise (LVE) and fun of physical exertion (FPE). The increase in all three subscales with an increase in ECPA participation levels emphasises the enjoyment that some students experience in ECPA. Many studies investigating PA in children and adolescents have identified enjoyment as one of the most significant correlates (Biddle *et* al., 2005; DiLorenzo *et al*., 1998; McCarthy and Jones, 2007). This will be further examined in chapter 5 under the qualitative data.

The link between a positive social well-being of the students in this study and higher ECPA participation levels shows that the influence of peers and parents is significant in

their PA behaviour. Studies have shown that family support is positively associated with PA in adolescents' (Biddle *et al*., 2005; DiLorenzo *et al*., 1998; Gustafson and Rhodes, 2006; Sallis *et al.*2000; Van Der Horst *et al.* 2007). A study by Wenthe and colleagues (2009) examining the relationship between factors of the YPAP model and MVPA in adolescents found that of all the factors they looked at, family support showed the strongest and most consistent relationship with male MVPA. The results from the present findings support the research in linking parental influence and PA behaviour. A positive association between peer involvement, peer support and adolescent PA has also been identified in research (Sallis *et al*., 2000; Van Der Horst *et al.* 2007). The WSFF (2011) report of N=1500 primary and post-primary school students highlighted the importance of the social aspect of PA and that they would be more encouraged to take part if their friends were active. Wenthe and colleagues (2009) found that peer support showed a significant correlation with the MVPA of male participants. Sabiston and Crocker (2008) found in a study with adolescents (N=902, aged 15-18 years) that encouragement from significant others was associated with high sport values. This can be related to PA and ECPA. The findings from this present study highlight the importance of social influence to adolescents with levels of peer acceptance and parental encouragement increasing as ECPA participation levels increased. The results are significant as they show that participation in ECPA, even just once a week (sometimes), can improve the social well-being of adolescent males (aged 12-15 years). The impact of peer and parental influence on adolescent males will be also be further examined through the qualitative data in chapter 5.

Overall, the results from this section of the present study support the YPAP model in that the students who reported to regularly participate in ECPA would answer 'yes' to the two questions of 'is it worth it' and 'am I able', as shown by their high psychological subscale scores. The high scores for the reinforcing factors of peer acceptance and parental encouragement indicate a positive influence on these students leading to a higher level of ECPA participation. The students who reported to 'never' participate in ECPA recorded the lowest scores across all seven subscales indicating that they would answer the questions of 'is it worth it' and 'am I able' negatively. The influence of peers and parents

may be limited or may be negative, which could possibly lead to a lack of ECPA participation.

Summary and Future Research Challenges

The challenge to future research is in identifying if any of these outcome variables are stronger than the others. Future research needs to use complex multi-variate statistics such as structural equation modelling in order to fully assess the impact of individual concepts on physical activity behaviour. Also, future research must use theory in order to test hypothesis. This study was guided by the YPAP model, but its lack of direction in how each of the variables underpinning the relationship between the question 'Is is worth it?' and the child's PA behaviour made the distinction between the subscales difficult to understand. The regression analysis showed that only two independent factors predicted participation in ECPA, these were the school the students' attended and the student's perceived physical competence (PPC). This result shows that students' ECPA participation level may depend on the school they are attending over and above numerous of the subscales from the YPAP model. In other words, if few ECPA opportunities are available in schools, then this barrier to non-participation is key.

In general, post-primary schools depend on the goodwill of teachers, in particular PE teachers, to provide ECPAs. Therefore, it is important for schools to have an extra-curricular school policy. The Department of Education and skills (2009) scheme to reward schools for improving the standard of physical education and ECPA is the 'Active Schools Flag' (www.activeschoolflag.ie). This, however, is optional and up to individual schools to apply themselves for this flag. The provision of a pathway for children to link with community volunteers, that link with local clubs or national governing bodies of sport (NGBs) e.g. Football Association of Ireland (FAI), is important. The Lifelong Involvement in Sport and Physical Activity (LISPA) model (Hughes *et al*., 2006), which focussed on pathways to develop and promote lifelong participation in sport and PA. The main pathway of the model in line with ECPA is the 'long-term recreation pathway'. This focuses on getting people involved in PA at a recreational level and helping them to persist in an active way of living through active recreation and organised PA

opportunities. The LISPA document emphasises the importance of PE in schools in promoting active lifestyles in children and adolescents', however, there is no mention of ECPA. This lack of acknowledgement of ECPA and its potential value to adolescents in post-primary schools, through PA participation and possible improvement of psychological well-being, highlights the need for ECPA to gain greater recognition.

The other main predictor of ECPA participation was perceived physical competence. This was clearly identified by students as a factor influencing their involvement in ECPA. Given the high correlation values between perceived physical competence and other YPAP subscales, this is not surprising. However, this research does suggest that perceived physical competence may be the key predictor of ECPA participation among adolescent males (aged 12-15 years), or indeed general participation in PA. Perceived competence has been shown in the research to be inextricably linked with positive PA behaviour, and even more so in adolescence (Telama *et al*., 2005; Woods *et al*., 2010). The fact that a lack of perceived competence has been highlighted in research as a major barrier to PA participation only demonstrates the importance of adolescents' perceived physical competence in relation to PA participation (Allender *et al*., 2006; Fahey *et al*., 2005).

This demonstrates that a lot of physical activities available to adolescents, particularly in school, are ability based. The research suggests that if students feel they are not good enough, they avoid PA or drop-out. In the case of ECPA in post primary schools, a possible way of attracting more students to participate might be to eradicate the competitive element to a certain degree or aim to make the activities more fun based rather than the current format in the majority of cases, competitive, traditional sports (Fahey *et al*., 2005; Smith *et al*., 2007; Woods *et al*., 2010). The results highlight the pressure adolescents feel they are under in order to be physically competent at ECPA, if they want to be involved. Due to the acknowledgement of PE as still being dominated by traditional invasion games, ECPA is an opportunity to attract more students who may not be of as good a sporting standard, but want to attend without the concern of perceiving

themselves not good enough to participate. This is a topic discussed in the qualitative data chapter.

There is a need for research to establish if there is a key variable linked to PA participation in adolescent males. For example, in this study, the students who had higher levels of peer acceptance had higher levels of perceived physical competence, fun of physical exercise and have a high liking for vigorous exercise. This finding demonstrates a relationship between and possible importance of peer influence and PA participation to adolescent males. The finding that perceived parental encouragement was the only YPAP subscale to reveal a significant difference (decrease) over the academic year suggests more research into this particular area may be worthwhile. This may be down to the influence of parents on adolescent males PA participation decreasing as adolescents increase in age. The actual reasons are unclear, yet the significant decrease over the year is worth noting for future research into the influence of parents and peers on adolescent males ECPA participation. Future research needs to move away from correlations to more complex statistical models to improve our understanding in this field.

The finding of the school student's attended as one of only two predictors of ECPA participation indicates the need for more research into what post-primary schools are offering in terms of ECPA and how often are they available. The second predictor of ECPA participation identified was the student's perceived physical competence. This indicates that adolescent males (aged 12-15 years) need to feel physically competent to participate in ECPA and it is an area that needs to be researched with larger numbers of adolescent males in post-primary schools to get a real insight into the influence of perceived physical competence on ECPA participation. This may also provide an indication of the importance of perceived physical competence on adolescent males' PA participation in general.

Strengths and Limitations

The quantitative data presented demonstrates the benefits of a longitudinal study in terms of analysing the consistency of results. The three time points for data collection (autumn, winter, summer) allow for an accurate measure of students PA and ECPA behaviour over an entire academic year. The findings from the quantitative analysis showed a consistency in the students' responses giving greater strength to the year-long averages for ECPA participation levels, weekly HPA, pedometer step count, etc. The verification question on the level of PA students typically engaged in every week was consistent at each time point, adding more strength to the validity of the PA results.

The self-report and objective measures used have limitations in that students' need to be trusted to put down honest figures for the amount of steps taken daily and to be accurate in their estimation of the number of days they got $\geq$ 60 minutes MVPA in the previous week or on a typical week. The pedometers could also be an incentive to take more steps than they normally would. While this is a positive for the students, it is not necessarily good for the study itself, as the steps taken may be higher than would normally be the case. The study was also limited in that after time 1, the full cohort of students (N=64) from one of the schools involved were excluded from pedometer step count measuring for times 2 and 3. This was due to the high number of students (n=20+) from this particular school not returning pedometers and diaries at time 1. Another weakness of the study is that it is based on males only. A similar cohort of same age females from similar disadvantaged backgrounds would be valuable to assess any similarities or differences in PA and ECPA levels and impact on psychological well-being. The qualitative chapter will allow for the comparison of results between quantitative and qualitative findings from the study and provide support for the findings from this chapter.

Chapter five – Qualitative Data

5.0 Results and Discussion

The primary purpose of the focus group discussions was to investigate the motivations of students who regularly participate in ECPA and the possible, positive impact on their psychological well-being. A secondary purpose was to learn more about the barriers preventing students participating in ECPA and what potential motivations or strategies, if any, might exist for the non-participants.

5.1 Demographic Characteristics of the Sample and Numbers per Time Interval

The information in this chapter represents the views and attitudes of a sub-sample of participants (N=43, aged 12-15 years) who all took part in focus group discussions regarding ECPA in post-primary school (Table 21). The focus groups were split into those who regularly participated in ECPA and those that never participated in ECPA. Two groups were selected from each of the four schools and the same students participated in a focus group discussion at each of the three time points (autumn, winter, summer) over the course of a single academic year (2008/2009).

Table 21 – Framework for Focus Group Discussions (Year-Long)

Time Point	Focus Group (N=24)	Participants (N=43)	Age Range (12-15 years)	Transcript (N=28,251)
Autumn	4 'Regular' 4 'Never'	20 23	12-15	n=5,247 n=5,807
Winter	4 'Regular' 4 'Never'	20 22	12-15	n=3,447 n=3,987
Summer	4 'Regular' 4 'Never'	19 22	12-15	n=4,522 n=5,241

*Note: 'Regular'= Regularly participates in ECPA, 'Never'= Never participates in ECPA.

5.2 Regular ECPA Participants

Data from the focus groups was filed under two headings: a) motivations for regularly participating in ECPA (Table 22) and b) the importance of ECPA to those who regularly participate (Table 23). Results are presented under key themes and their relevant sub-themes.

Table 22 – Motivation for Regularly Participating in ECPA

Theme	Sub-Theme
Enjoyment	- Personal Enjoyment - Self-Improvement
Perceived Competence	- Increase Self-Esteem - Improve Skills and Fitness
Social Influences	- Peer Support - Parental Support

Enjoyment

The enjoyment of participation in ECPA was the main motivational reason cited by regularly participating students. However, analysis revealed that two separate sub-themes under enjoyment were present, these were i) factors related to personal enjoyment and ii) enjoyment associated with self-improvement and the positive sense of achievement.

<u>Personal enjoyment</u>

The students consistently, over the academic year, referred to enjoyment of ECPA and the fun of actually taking part in this form of activity. Due to the high frequency with which enjoyment was mentioned and from the content of their comments, it was evident that personal enjoyment was the main motivator for participation in ECPA for this group of adolescent males "I like doing it [ECPA] and it's deadly" and "its pure just fun, it's whopper!"

Wankel (1993) describes enjoyment as a positive effective or emotional state, which reflects feelings such as pleasure, liking and fun. Scanlon's Youth Sport Commitment model (1993) has enjoyment of sport at its core. The study of sport in children suggests that sport enjoyment is linked to intrinsic achievement, aswell as intrinsic non-achievement, such as movement and excitement (Scanlon *et al*., 1993). Berger and colleagues (2007) suggest that intrinsic sources are the most important sources of enjoyment, which include improving physical skills and experiencing fun. Research has previously defined 'having fun' and 'enjoyment of PA' as main motivations why children and adolescents engage in PA (Allender *et al*., 2006; Crocker *et al*., 2004; MacNamara 2011; Mulvihill *et al*., 2000). The findings from this study support this view.

Hashim and colleagues (2008) published a study 'Validating the Youth Sport Enjoyment Construct in High School Physical Education' to try to develop and validate a questionnaire related to PE enjoyment. The study involved students (N=324, 48% males/52% females) from 3 public high schools in Western Australia. The students (aged 13 years) from grades eight, nine and ten, completed a 37-item self-report questionnaire based around the Youth Sport Enjoyment model (Scanlan and Lewthwaite, 1986). The study found that all factors measured correlated positively with PE enjoyment. The factors included physical competence, peer interaction and parental encouragement. The study was based around PE enjoyment, yet the results could also be linked to PA and ECPA enjoyment. McCarthy and Jones (2007) study 'A Qualitative Study of Sport Enjoyment in the Sampling Years' looked at children (aged 7-12 years) and their enjoyment of sport. The study sampled a total cohort of students (N=55, 22 males/23 females) who participated in organised sport in central England. The participants were involved in focus group discussions. Among the main sources of enjoyment they highlighted were perceived competence, social involvement and friendships.

Tannehill and colleagues (2011) identified experiencing fun as one of the most important motivators for children and adolescents (male and female) to be physically active. For boys, fun of PE in school was linked to games where they could compete and all invasion games. It has been suggested that children and adolescents who experience feelings of

enjoyment from participation in sport may be connected to continued participation in sport and PA (Berger *et al*., 2007; McPhail *et al*., 2011; Scanlon *et al*., 1993; Weiss *et al*., 2001). In a study of post-primary students' attitudes and perceived purposes of PE in school, Wang and colleagues (2008) reported that students who experienced high enjoyment of PE had high intentions to be physically active. This may be similarly applied to ECPA enjoyment. Some studies have shown that PE enjoyment is positively associated with ECPAs (Sallis *et al*. 1999; Trost *et al*. 1997). This demonstrates the potential of ECPA as an avenue for helping adolescents to enjoy PA, therefore, encouraging them to be physically active on a more regular basis.

Self-improvement

The students, through reference to self-improvement also portrayed their enjoyment of ECPA. This sub-theme of enjoyment revealed that within the achievement situation of sport, the opportunity for self-improvement in terms of personal skill and ability "to keep good at football or something if you were doing it [ECPA] ... to improve your ability and skill" and also in terms of improving personal fitness levels and its consequent impact on health "just to get better at all sports and to stay fit" were a source of enjoyment and positive motivation for sustained engagement by adolescent males (aged 12-15 years) in ECPA.

Enjoyment is associated with feelings of mastery, which in turn increase motivation (Harter, 1978, 1981). This is supported by Scanlon *et al*. (1993) who linked enjoyment with intrinsic achievement, which included perception of mastery in sport. Both these theories can be linked to McCarthy and Jones (2007) focus group sport study with children (aged 8-12 years), which demonstrated that mastery processes were an important part of their sport enjoyment. For example, students in their study referred to the enjoyment of making tackles and scoring goals in football or hitting the ball well in golf. Wankel and Sefton (1989) also suggested that the child's perception of whether they performed well or not is connected to their having fun and enjoyment or not. In terms of ECPA, mastery processes could come in the form of providing of opportunities that

promote achievement, related to developing skills during training, practice and competition, in order to increase enjoyment. Children and adolescents enjoy taking part in sporting activities where they feel skilled and competent (Babkess and Weiss, 1999).

Perceived Competence

Another positive, psychological theme that emerged from the regular ECPA participation focus group discussions was that of perceived competence. Students spoke about participation in ECPA making them feel that they were good at physical activities, that they could be as good as anyone else and this has led to them being accepted as part of a team.

Increased self-esteem

This positive assessment of perceived competence was seen to have a positive effect on their self-esteem. The students felt that participating in ECPA developed their confidence and made them believe in themselves more. This was evident in comments such as; "It [ECPA participation] makes ya believe that you can do more", and "it [ECPA participation] makes ya feel you're as good as everyone else", "I enjoy it … It raises me self-esteem". Their comments also suggested that when they were selected for the school team, or even just a team in the extra-curricular training sessions, or if their team won a competition, this made them feel good about themselves "If ya win a medal it can shoot your confidence right up" and "yea when ya get picked [for a team] it helps your confidence".

The comments from these students support previous research suggesting that there is a positive correlation between improvement in self-esteem and feelings of self-worth from enjoyable PA participation (Biddle and Assare, 2011; Hallal *et* al., 2006; Fox, 2000; Sonstroem, 1997). Altintas and Hulya Asci (2008) found that physically active males and females (aged 11-14 years) scored higher on almost all subscales of physical self-esteem than their less active counterparts. This is similar to findings from a longitudinal study (Inchley *et al*., 2011) of Scottish adolescent's (aged 11-15 years), which looked at physical self-perceptions with PA. Results showed that perceived competence and

physical self-worth was associated with PA, showing that adolescents who feel able to perform well within a sports context were more active. However, perceived competence showed a decrease with increasing age in adolescence, particularly for females. Hilland and colleagues (2009) study into the PE predisposition scale with students in Northwest England (aged 12-14 years) suggested that if PE provides opportunities for increased perceptions of competence and confidence, then children are more likely to enjoy their experiences and maintain motivation. Wang and colleagues (2008) study reported that adolescent students perceived that one of the purposes of PE was to increase their self-esteem. This portrays a positive student view of PE, which can be linked to ECPA.

Adolescence is a period where students look towards their peers for a sense of belonging as they try and cope with a changing environment, which has an important role in contributing to feelings of self-worth and coping with identity concerns (Berndt, 1989, Harter 1990). Scanlon and Lewthwaite (1986) referred to the importance of being part of a team and the feeling of affiliation for sport enjoyment. MacPhail and colleagues (2008) findings from a study with children (N=70, aged 9-11 years) involved in a 16 week 'sport education programme' support this theory. The sport education model encompasses six features characteristic of sport including a season of practice and competition, team affiliation for the two terms, an event day, formal competitions, scoring and record keeping and a festivity feature for social enhancement (Siedentop *et al*., 1998). From interviews conducted throughout the 16 week programme, MacPhail and colleagues (2008) reported the students' sense of belonging, learning and building friendships, from being affiliated to a team, all of which increased enjoyment levels making them feel good about themselves. Being part of a team, or even just feeling like you were part of a team in ECPA was a confidence builder for the students in this present study.

Improved fitness and skills

Perceived competence was also portrayed in the focus groups through a reference to improved fitness levels and skill developments. According to Allender and colleagues (2006), self-perception is extremely important in motivating people to participate in all types of PA. In response to why they participate in ECPA, one student responded; "yea

it's good and ya improve like or get on a team". Another student commented that "your skills are improving and maybe your fitness so ya feel better about yourself".

These comments support previous findings that perceived physical competence and perceived importance of being fit or good at sports were among the main correlates of adolescents' PA (Inchely *et al.*, 2011; Strong *et al*., 2005; Telama *et al*., 2005). Paxton and colleagues (2004) study on perceived competence and PA in youth (aged 9-14 years) reported that when perceptions of competence increased, so did activity levels. Hilland and colleagues (2009) also found a strong, positive link between perceived PE worth and skill level in PE. A study by Telama and Pieron (2005) also suggested that young people who show a high level of perceived competence also have a positive attitude towards school and PE. Weiss (1996) and Welk (1999) suggested that when youth perceive themselves as being good at an activity, they increase their attraction to this activity and will do it more often. In this study, the views of the students show that their perceived competence increases through participation in ECPA, thus making ECPA valuable to them, and indirectly, potentially influencing their attitude (Telama and Pieron, 2005), their activity levels (Hilland *et al*., 2009; Paxton *et al*., 2008). This highlights the importance of adolescents being made feel they are competent at ECPA, whatever their ability level, in order to encourage more students to participate on a regular basis.

Social Influences

The third main theme that emerged from the regular ECPA participation groups was the social aspect to involvement. The main sub-themes identified were peer and parental support.

Peer Support

The students reported being with friends as another main attraction of ECPA participation. When asked why ECPA was attended regularly, one student replied "Having a laugh with your mates". Other students felt that the presence of friends made ECPA more enjoyable "Being there with your mates is deadly cos ya have better crack".

Tannehill and collegues (2011) qualitative research, which included several focus group discussions with Irish children and adolescents found that post-primary males and females all referred to being with friends as a major reason for participating in PA. Allen's (2003) research found that that sport participation provided older children (aged > 12 years) with an opportunity to satisfy their need to belong, this is also found in the current study as indicated by this student's quote "you're communicating with more fellas, making more friends, helps ya at talking and ya get associated with people better". McCarthy and Jones (2007) focus group study with children (aged 7-12 years) identified themes of social involvement and social recognition of competence when sourcing enjoyment of PA. Social interaction and support from peers have previously been positively associated with PA in youth (Van Der Horst *et al*. 2007; Biddle *et al*. 2005; Sallis *et al*. 2000). This social interaction has been previously identified by Berger and colleagues (2007) who suggested that adolescents try to do what their peers do and that they have similar desires and values "some people [friends] just encourage ya to go because like ... its [ECPA] fun and they probably think that you'll like it ... and maybe they won't have to go home on their own like ...".

This support from peers also has the potential to make ECPA more enjoyable for participants and/or improve students' perceived competence in their physical ability, thus making ECPA participation more attractive. Allen (2003) stated that older children are more strongly influenced by peers in sport than younger children (aged < 12years) and that encouragement, social involvement and friendships are important sources of sport enjoyment.

Parental Support

Another social aspect linked to regular ECPA participation is the influence of parents. Two of the main ways adolescents reported that their parents supported their participation in ECPA revolved around parental approval and parental encouragement.

Parental Approval

Parental approval was the main aspect of parental support that came across from students in response to the question regarding parental/guardian encouragement of their ECPA participation in school. The comments were generally very positive regarding parental support and it was obvious that students' appreciated and valued this support. The comments included "They like to see ya having fun, enjoying yourself" and "they want ya doing something ya enjoy, so you're not being lazy or sitting around". Certain comments highlighted how the students could identify that their parents wanted the best for them and were looking out for them; "They know you're not losing from it [ECPA participation], better than hanging around on the streets or whatever".

Focus group studies have found positive associations between socially significant others (including parents) and PA participation (Tannehill *et al*., 2011; McCarthy and Jones, 2007). Family support has been consistently associated with PA in youth in reviews of quantitative studies (Biddle *et al*., 2005; Van Der Horst *et al*., 2007). Similarly, social interaction has been consistently associated with PA in reviews of studies (Allender *et al*., 2006). Again, most of the reports have been investigating cross-sectional studies. A longitudinal study of children and adolescents found that family and social support were important correlates of PA in youth (DiLorenzo, 1998). More longitudinal studies are needed to identify possible changes in adolescents' perception of their parents support and its value, as they move through adolescence.

Verbal Encouragement

The regular ECPA participants also mentioned verbal encouragement from parents and it was clear that this was important to the students and made them feel more positive about themselves. Comments included; "Me Da goes to me matches and me Ma encourages me" and "I get encouraged to go … me Da an all, he gets me inta everything". Some comments also showed that verbal encouragement from parents may have a positive influence on the students' perceived competence in ECPA; "yea my Da does tell me to go if you want to go ... that you will improve your skills and that you will get better".

Brustad (1996) stated that children who are exposed to strong parental support have a higher level of perceived competence than children who receive less parental support. McElroy (2002) also suggested that parental factors could have an effect on children and adolescents' PA participation by having an influence on their perceived competence. McCarthy and Jones (2007) qualitative study reported that children's (aged 7-12 years) feelings of self-worth were enhanced by verbal and non-verbal support from parents. Parental approval and verbal encouragement were the main sources of parental support for the students in these focus groups. The students' belief that their parents wanted them to participate and wanted the best for them was a positive influence on their participation. This highlights how influential parents can be in terms of their children's participation in PA, and ECPA in school. Post-primary schools need to make parents aware of ECPA on offer in schools on and highlight how parents can play a major role in encouraging their children to participate and potentially, benefit from it. There was no mention of other types of parental support such as parental modelling or logistic support in the focus group discussions. Parental modelling relates to the PA behaviour or the sedentary behaviour of parents. Logistic support refers to the provision of transportation to PA opportunities (Smith and Biddle, 2008).

Another theme that emerged from the discussions was the importance students placed on ECPA participation.

Table 23 – The Importance of ECPA to those who Regularly Participate

Theme	Sub-Theme
Importance of ECPA to Students	- Making School More Appealing - Improved Attendance/Effort in Class

Importance of EPCA to Students

The view of school life without ECPA was quite a negative one for many students, demonstrating how positive these students feel about ECPA in school. When asked if

having no ECPAs available would affect their school life, one student summed up the general view of many regular participants "all u'd do would be come into school and do your work, you might not do it, then you'd get in trouble ... Got nothing to look forward to ... Nothing after school and all".

The main sub-themes from the discussions were making school more appealing, and an improvement in attendance rate and effort in class.

Making School More Appealing

It was clear from many comments throughout the focus group discussions that ECPA was valued by students and made school more appealing for many. When asked about the importance of ECPA in school and how it might affect them if there were no ECPA, students responded with comments such as "School can be so boring, sports (ECPA) can make it interesting", "it's the best thing about school". It also gave some students something to look forward to during the school day "Like if you're in trouble and maybe ye had a bad day in school, ya can still look forward to after school stuff [ECPA] ... That's if your let!" and "if you are involved then you always have something to look forward too".

Motivation to Attend School and Make More of an Effort in Class

ECPA participation was seen as being a motivational factor for some students' to actually attend school more often and make more of an effort in class. One student explained that; "Sometimes the only thing getting ya up out of bed is the thought of the sport [ECPA] … and the tournaments". Others suggested, "there would be nothing to look forward to in a few weeks time or contests ... it [ECPA] gives ya the motivation to get your work done to get out to the football" and "it [ECPA] keeps ya going in class ... Thinking that later on like ya will be out on the field or doing table-tennis or whatever"

Some students also made reference to positive encouragement from peers to make sure they were in school to attend ECPAs "yea, when like people are not going in, like oh I'm staying off, but then, they say there's training on … I have to go in". Others suggested

that the threat of not being allowed participate in ECPA due to mis-behaviour or lack of work done in class was motivating them to try harder in class "cos it [ECPA] motivates ya to do better ... cos ya can't do the sports if your misbehaving in class ... like, ya don't have to be smart, ya just have to do what you are asked, if ya do that, ya get to go out", "if ya don't do your work ya can't get out there and do it [ECPA]", "some people might mess all the time aswell if there was none [ECPA] .. At least with extra-curricular ya have something to behave for".

These comments provide useful information that demonstrates how important the opportunity to participate in ECPA during or after school may be as a method of improving student behaviour, student attendance and student commitment at school. They also link in with the previous point on how ECPA can make school more appealing for these students. An OECD report on 'Equity and quality in education, supporting disadvantaged students and schools (2012) revealed that students from low socio-economic background were twice as likely to be low performers, implying that personal or social circumstances are obstacles to achieving their educational potential. Across OECD countries, 20% of young adults on average dropping out before finalising upper secondary education. In Ireland, students from low socio-economic backgrounds are 2.4 times more likely to be low performers than their peers with high socio-economic status. Students whose parents have low economic attainment have twice as high a risk of low performance and boys are more at risk of low performance than girls. The report makes numerous recommendations and proposals in order to try and decrease drop-out and improve completion numbers. There is no mention of sport, physical education or ECPA in school in the report. Latest reports from the ongoing ESRI 'Growing up in Ireland' study (Layte and McCrory, 2011) reveal that adolescents (aged 13 years) from low socio-economic backgrounds were less likely to be involved in organised sporting activities than those from higher socio-economic backgrounds.

This current study has students from low socio-economic backgrounds at its core. The views from the students who regularly attend ECPA highlight the potential of PA in school, as an incentive to actually be in school and to try harder in class. It demonstrates

their perception of how important ECPA participation is to them in school and the difference it can make to their school experience. Previous research has concluded that PA can lead to higher academic achievement in school (Strong *et al*., 2005; WHO, 2003). According to Shephard (1996) increased PA levels may be related to increased self-esteem in adolescent's, which could be expected to increase classroom behaviour and academic performance. A study by Coe and colleagues (2006) also found that higher grades were associated with vigorous physical activity. Shephard (1996) also suggested that PA during the school day, with an emphasis on PE, may lead to increased arousal, reduced boredom, increased attention span and increased concentration. These positive psychological effects have the potential to improve classroom behaviour and possibly increase learning capacity. Biddle and Asare (2011) revealed that many studies have highlighted a possible link between the integration of PA in the school system in order to help young people learn better and reduce the likelihood of negative classroom behaviours. The comments from the students in these focus groups provide support for these theories. Finn (1989) suggested that participation in ECPA gives students an alternative route through which students having academic difficulties can maintain contact with the school environment. ECPA, as a viable opportunity for adolescent's to be physically active in post primary school, has the potential to positively affect the attitude students have towards school and study. This highlights more potential benefits of ECPA participation in schools, whereby improvements to student discipline, attendance and academic achievement could be realistic outcomes. This could be most effective in schools that cater for students from socially and economically disadvantaged communities, such as the four involved in this particular study.

Overall, the main motivations for ECPA participation, which emerged from these focus groups, were enjoyment, perceived competence and social factors. These factors are in line with the quantitative findings, which found that regular ECPA participants scored higher on all seven YPAP model based subscales than those students who never participated in ECPA. When these views from the regular ECPA participants are related to the YPAP model (Welk, 1999) to gauge adolescent PA behaviour, a positive picture emerges. It is clear that under the pre-disposing factor labelled 'is it worth it?" the

answer is a resounding yes, as they constantly refer to enjoyment of participation, and even go so far as stating that it motivates them to behave in class in order to ensure they could take part in ECPA. Under the pre-disposing factor labelled 'am I able', the positive reference to perceived competence from the regular ECPA participant's shows that the answer here is also positive. Regarding the enabling factors from the model (Welk, 1999), the regular participants are more likely to be physically active than the students who never participate due to a higher perceived competence in themselves, which supports the YPAP model. This present study did not investigate the 'access' or 'environment' variables under the enabling factor of the model, however, there was control for ECPA by ensuring that it was offered in each of the four schools.

The positive social theme that emerged from the regular ECPA participants in relation to both peer and parental support provides back up for the YPAP model in terms of reinforcing factors being an important influence on PA behaviour. Family and peer influence are both variables under the reinforcing component of the model. The model suggests that the more positive the peer and parental support is, the more likely it is that children and adolescents will be involved in PA. The views of the regular ECPA participants suggest this to be the case. Students referred to being with friends as a major motivation for ECPA participation.

5.3 Barriers to ECPA Participation

Data from the focus groups with students who never participated in ECPA were filed under two headings: a) barriers to ECPA participation (Table 24) and b) the importance of ECPA to those who never participate (Table 25). Results are presented under key themes and their relevant sub-themes.

Table 24 – Barriers to ECPA Participation

Theme	Sub-Theme
Perceived Lack of Competence	- Not Good Enough - Low Self-Esteem
Peer Rejection	- Verbal abuse from peers - Pressure from Peers - Perceived risk of Bullying

Perceived Lack of Competence

The main barrier to ECPA participation for students in these focus groups was a perceived lack of competence. This lack of competence was highlighted through students' comments relating to not being good enough at sports and physical activities, and a lack of self-esteem.

Not Good Enough

The most common reason reported by students for not participating in ECPA in school was a feeling of not being good enough at ECPA. These perceptions are demonstrated in comments such as; " Sometimes I don't think I'm good enough in certain sports" and "I'm terrible at them [ECPAs]". Students' lack of belief in their physical ability seemed to have a negative effect on their possible ECPA involvement "I probably don't think I'm good enough or that I would make the team". The reasons given by the students are closely linked to findings from previous research in this area. McCarthy and Jones (2007) concluded that demonstrating a lack of competence was a main source of non-enjoyment for children (aged 7-12 years) in sport. The study suggested that demonstrating a lack of ability or competence was a child's belief that they were incompetent at a particular PA. The CSPPA study (Woods *et al*., 2010) also revealed that a feeling of incompetence was one of the main reasons for non-participation in ECPA in post primary schools. Allender and colleagues (2006) also identified a lack of perceived competence as a barrier to PA participation. An Irish study published by the Office of the Minister for Children (2006) investigated Irish adolescents (aged 12-18 years) patterns in sport and PA found that one of the main reasons for drop-out from sport and PA was not having a good enough skill

level (De Roiste and Dinneen, 2005). The ongoing ESRI 'Growing up in Ireland' longitudinal study (Layte and McCrory, 2011) found that the main reason given by thirteen-year-old students who did not participate in PA on a regular basis was 'I'm no good at games'.

Allender and colleagues (2006) reported that being unable to demonstrate competency of skills to peers was a discouraging factor for adolescents in physical education. Fahey and colleagues (2005) reported that the one aspect of sport that a majority of students did not like was getting left out because you are not good enough. The risk of feeling excluded in sport stands out as a widespread negative concern in what otherwise is a generally positive picture. He also alludes to a group of students who are interested in sport but are not good at it, and suffer the indignity and discouragement of being left out of teams or games because they are not seen as being good enough, an experience that causes more concern to students in second-level schools than any other possible negative aspects of sport he looked at (Fahey *et al*., 2005).

Low Self-Esteem

The students' perceived lack of competence was also highlighted through comments related to low self-esteem. The following reply from a student in response to why they do not participate in ECPA highlight their perceived lack of ability and the consequent impact this can have on their mental health "Yeah, i crack easily under peer pressure, so if I'm not good at the sport and i have the ball, I'd probably just panic". The fear of failure and nervousness that this student commented on, highlight a perceived lack of competence from students. A study by Telama and colleagues (2005) investigating the physical activity levels of students (12-15 years) found that the least active group had low perceived physical competence and their attitude towards PE was negative. The quantitative results from the present study show that the students who never participate in ECPA score lower on the psychological well-being subscales of perceived physical competence and physical self-worth than the students who regularly or sometimes participate. The quantitative results, alongside the qualitative findings here go some way to highlighting the lack of self-esteem in some students who never participate in ECPA.

Peer Rejection

The second main theme under barriers to ECPA participation was peer rejection. This is the lack of support these students feel they receive from their peers in terms of ECPA participation. The main sub-themes that were developed under peer rejection were verbal abuse from peers, pressure from peers and bullying.

Verbal abuse from Peers

Verbal abuse from peers seemed to have a real impact on the ECPA participation levels of these students. Comments from students illustrated just how influential verbal abuse from peers could be in terms of ECPA participation; "if im not good enough and then the people that are there are pressurising ya and slagging ya, thats the reason i dont go". The comments highlight how the students here feel that they are not part of the group or part of the team. There is n sense of belonging for them in ECPA. This is in stark contrast to the views of the regular participants who gave 'being with friends' as one of their main motivations for participating in ECPA. This verbal abuse from peers shows that students feel they must have a level of physical competency in order to attend ECPA. This is something that needs attention in schools. Again, the quantitative findings match up with students who never participate in ECPA scoring lower on perceived physical competence and physical self-worth than those students who sometimes or regularly participate, showing the strength of these results from different methods of measurement.

Pressure from Peers

In this case, certain peers made the students feel uncomfortable at ECPAs "yea messers and guys who when you want to try something will pressure you to give them the ball". Others suggested that they nearly could not make a mistake for fear of pressure from regular participants "yea like if you make a mistake they give out to ya". Some comments even hinted at pressure from their own friends in terms of participating, "cos if my friends told me not to go then i would feel that i wasn't good enough". These views from students correspond with a study by O'Dea (2003) that reported negative pressure from peers as a barrier to PA participation.

Bullying

According to Collins and colleagues (2004), bullying has become a major issue in school life and can have an impact on the students' social, emotional, psychological and educational development. Some of the comments from students regarding reasons for not taking part in ECPAs suggested that one or more individuals made participation an unpleasant experience, as one student noted "there are certain lads who do certain sports who completely ruin it for everyone else". Other comments indicate that bullying is a factor involved in non-participation for some students "When you are going to it [ECPA] and you make somebody mad, they could push you and all and you wouldn't really like that stuff". Comments such as this suggest that these students may wish to attend, yet are being discouraged from engaging in ECPAs due to factors such as bullying. Some students showed a fear of bullying starting in ECPAs and possibly carrying on into the classroom or around the school;

"if you went to a certain sport and there were people there who were really good at it and really competitive and you were terrible, they might start picking on ya and slagging ya, maybe even for the rest of the year".

This comment shows how influenced students are by peers, and how the threat of further bullying, over a longer period could further reduce the possibility of these students participating in ECPA. Overall, the theme of peer rejection has been identified as a very influential one. The views from students highlight just how much they are concerned by what peers do and say.

When the views from the students who never participated in ECPA are related to the YPAP model (Welk, 1999) to gauge adolescent PA behaviour, a less positive picture emerges than that of the regular ECPA participation groups. Under the pre-disposing factor labelled 'is it worth it?" the answer to the question is negative, as they made reference to many barriers to participation including a perceived lack of competence and peer rejection. Under the pre-disposing factor labelled 'am I able' from the model, the answer is no, due to these students highlighting, again, their lack of perceived

competence. This indicates that these students are less likely to be active than the regular ECPA participants, which supports the YPAP model.

In terms of the reinforcing factors from the model, the peer influence, in particular, was influential on these students' decision not to participate in ECPA. They referred to peer rejection, in the form of verbal abuse, pressure from peers and bullying as reasons for not participating in ECPA. This negative response to the reinforcing variables supports the model in that these students would engage in less ECPA. In terms of teacher influence, the students who never participated in ECPA felt that more encouragement could influence them to take part. The same was felt about peer and parental support also.

The following are two other themes that emerged from the discussions with the groups that did not participate in ECPA in school.

Table 25 - Perceived benefits of ECPA participation (to the regular participants)

Theme	Sub-Theme
Acknowledgement of ECPA participation benefits	- Psychological (self-esteem, self-belief, confidence building) - Skill development - Social (making friends)
Encouragement to participate	

Acknowledgement of ECPA Participation Benefits

Students in these focus groups reported never taking part in ECPA in school, yet they could appreciate the value of regular participation to those students who did engage in ECPA. The benefits to participation, as they saw them were i) psychological ii) skill development and iii) social benefits. These align with the motivations for ECPA participation reported by the regular ECPA participants, which were discussed earlier in the chapter.

Psychological

In response to the question of did they believe the regular participants benefited from attending, one student commented that " People who take part regularly can build up self-belief that they can do it [ECPA]". Another student felt that, "if they [regular participants] get complimented a lot it would raise their self-esteem". They could also identify a greater level of confidence in them "ya can tell, even when you hang around with them, how confident they are".

Skill development

The suggestion that the students who regularly participated in ECPA would improve their skill development was regularly linked with higher confidence levels, "You would be getting better at the sports and once you improve you build confidence ... I think if you scored a goal or something, that makes ya feel good about yourself". This highlights the students' view that with improved ability comes greater self-confidence.

Social

The students also made reference to the positive benefit of getting on with people better, "Because when you are doing something [ECPA] you could, like when you are not getting on with people you could get on better with them during that sport". They could recognise that ECPAs were a chance to get to know other students better, even ones they did not get on with previously.

This recognition of the benefits of regular ECPA participation is positive and shows that there is potential to attract more students to participate. The students who never participate provide enough information to show that they know that participation can be beneficial, the key is to actually get them attending in order to gain from ECPA engagement.

Encouragement to Participate in ECPA from Peers, Parents and Teachers

When asked what could possibly make them attend ECPA, students referred to more encouragement from significant others (parents, peers and teachers) as a possible

motivational factor in attracting them to ECPA. One student suggested, "if they [parents] give you belief then you will go and you can reach your goal". In terms of peer encouragement, a student reported that it would "make you feel that you were good at the sport … give ya a bit of a confidence boost". Also on peers, a student suggested that "if they say you are good enough to go, then you will believe and you might go". Others felt that the presence of friends would be a positive factor for participation, "Having friends with you because they'll encourage you". When asked about more encouragement from teachers, the response was a resounding yes.

Again, this highlights the fact that many students who do not take part in ECPA may be encouraged to do so in the future. It also demonstrates how much of a positive influence peers, parents and teachers can potentially be in affecting students participation in ECPA. Teacher influence needs to be investigated in research.

5.4 Summary of Qualitative Data Analysis

Overall, the regular ECPA participants were motivated to attend by enjoyment, perceived competence in themselves and by social influences. The comparison with the literature shows that the views of these adolescent males are typical with findings from previous research into this area. Another theme that emerged from the regular participation groups was that of the importance they placed on ECPA participation in school. This positive perception of ECPA was making school a more enjoyable experience for students and giving them something to look forward too. This suggests that if more students participate in ECPA, then schools could potentially reap the potential benefits of lower absenteeism rates and higher levels of effort inside the classroom. This could in turn, lead to improved academic performance from students, as highlighted in various studies (Coe *et al*., 2006; Shephard, 1996). This could be particularly valuable for students from disadvantaged backgrounds such as those involved in this study.

The main barriers to ECPA that emerged from focus group discussions with the students who never participated in ECPA were a perceived lack of competence and peer rejection. The perceived lack of competence finding is in line with previous investigations into PA

behaviour (McCarthy and Jones, 2007) and ECPA participation (Fahey *et* al., 2005; Woods *et al*., 2010). One major positive to come from discussions with the students who never participate in ECPA was their appreciation of the benefits of ECPA participation to those that regularly attended. This indicates that the potential is certainly there to encourage these students to get involved. If they can acknowledge the potential benefits of participation to those that do participate regularly, then there is an opportunity to encourage them to attend. As already mentioned, one of their suggestions as to what might make them participate was more encouragement from significant others (peers, parents, teachers). This demonstrates how a positive attitude from significant people in their lives could benefit them and help to overcome the major barrier of a lack of perceived competence.

The qualitative data highlighted here is in line with much of the quantitative data discussed in chapter four. The themes that emerged form the regular ECPA participation focus groups and the focus group students that never participated in ECPA backed up the quantitative findings. Themes of perceived competence, enjoyment and social influences as motivators for participation, support the high scores that were reported under the psychological and psychosocial YPAP model subscales for the regular ECPA participants. Themes of a lack of perceived competence and peer rejection as barriers to ECPA participation support the lower scores reported under the psychological and psychosocial YPAP model subscales from the students who never participate in ECPA. This emphasises the value of the mixed method approach to data collection research in this study.

Strengths and Limitations

Many studies into PA behaviour in adolescents are cross-sectional (Altintas and Hulya Asci, 2008; Fahey *et* al., 2005; Smith *et al*., 2007; Sabiston and Crocker, 2008). This is a limitation in regards to what we can predict from adolescents as they increase in age. Longitudinal studies need to be the focus of attention in research to assess students' attitudes to ECPA and their participation levels in it. One of the strengths of this study was the longitudinal approach and finding out students' views on ECPA and participation

levels at three time points throughout the academic year. The findings from the focus group discussions showed that the students were consistent in their views and attitudes towards ECPA over the whole year. The combination of qualitative and quantitative research methods used in this research improves the validity of results. More qualitative research with adolescents is required if real insights to what they think about PA and ECPA are to be attained. A weakness in this study is that it only included males; there is a need to replicate this study amongst females. Additionally, future longitudinal studies over a number of years, particularly throughout adolescence would be worthwhile to assess trends over a longer period and potentially finding a way of combating the reduction in PA, as students get older.

Chapter Six

6.0 Conclusions and Recommendations

6.1 Implications of the Study

The first aim of the study was to explore the ECPA participation levels of a cohort of post-primary school, Irish adolescent males (aged 12-15 years) from disadvantaged backgrounds. The majority of the students were involved in ECPA on a regular ($\geq$ 2 times a week) basis (43%). The second highest cohort was the sometimes (once a week) group (41%). Only 16% of the students reported to never take part in ECPA in school. This is a positive finding, highlighting the large percentage of students (84%) that avail of ECPA on a weekly basis.

The second aim of the study was to assess PA levels in terms of HPA ($\geq$ 60 minutes MVPA daily) and daily pedometer step count. The vast majority of students (86%) did not meet the recommended PA guidelines for children and young people ($\geq$ 60 minutes MVPA daily, DOHC, 2009). The average amount of days per week students achieved $\geq$ 60 minutes MVPA was 4.98 ($\pm$ 1.21). This may have negative consequences for their current and future health. The average daily step count over the academic year was 11,981 ($\pm$ 3385). This average is well below the closest age group (males, 6-12 years) daily step count guidelines of 15,000 steps per day. At present, there are no official step count guidelines for adolescents. The study found that the higher the level of ECPA participation, the higher the average daily step count and the average number of days per week students achieved $\geq$ 60 minutes MVPA. These results highlight the potential value of ECPA participation as a source of increasing the PA levels of adolescent males.

A third aim of this study was to investigate the possibility of regular ECPA participation being linked to a positive psychological well-being. This was examined by using a combination of quantitative (self-report questionnaire and pedometer step count) and qualitative (focus groups) measures. The quantitative data revealed that the higher the ECPA participation level, the higher the YPAP model based subscale scores. Therefore, the students who participated in ECPA on a regular basis had the highest scores for

perceived physical competence, physical self-worth, liking of games and sports, fun of physical exertion and liking of vigorous exercise. The students who reported to never participate in ECPA had the lowest YPAP subscale scores. These findings again show the potential positive impact on the psychological well-being of adolescent males from regular participation in ECPA.

The final aim of the study was to try and understand the motivations and barriers to participation in ECPA for students. The focus group discussions with students who regularly participated in ECPA found that the main motivations for taking part were 'enjoyment', 'perceived competence' and 'to be with mates'. The qualitative findings for this group supported the quantitative data, which showed that the regular ECPA participants recorded the highest levels of psychological well-being on the YPAP based subscales. This particular group indicated how much value they placed on ECPA and how important it was as part of school life. They felt that it encouraged them to make more of an effort in class and, in some cases, even attend school for fear of not being allowed take part due to mis-behaviour or lack of attendance. This is hugely important given that these students are from socially and economically disadvantaged communities.

The students who reported to never participate in ECPA gave a 'lack of perceived competence' and 'peer rejection' as the main barriers to their lack of involvement. This reference to a lack of perceived competence correlated with the quantitative data where 56% of the students who reported to never participate in ECPA, gave 'not being good enough' as the main reason. These qualitative findings also supported the quantitative data, which showed that the students who never participated in ECPA scored lowest on all YPAP based subscales. These students could, however, recognise the benefits of ECPA participation to those students that regularly participated. They acknowledged their higher levels of confidence, making more friends and their improvement in sporting skills. This shows that there is potential to encourage these students to take part in ECPA more often. If they can identify the benefits of participation to the regular ECPA participants, then it must be possible that they would like to benefit from taking part also. This group suggested that more encouragement form significant others (parents, peers,

teachers) may entice them to engage more in ECPA. This highlights the importance of significant others in the PA behaviour of adolescent males and demonstrates how much of an influence they can be.

The only two predictors of ECPA participation from the outcome measures and the YPAP based subscales were the school students attended and perceived physical competence. This highlights the importance of what post-primary schools are offering for ECPA, how often they are available and the importance a school places on ECPA. Students can only participate in ECPAs if they are available to them. Perceived physical competence has been shown from these results to be extremely important to adolescent males. The findings highlight that many adolescent males need to feel that they are physically competent in order to participate. This may be an indication that ECPA has its main focus on competition and that it possibly only caters for students with more physically ability.

Overall, the hypothesis of the study, guided by the YPAP model, was proven as students who participated in ECPA on a more regular basis recorded a higher step count, a higher level of HPA ($\geq$ 60 minutes MVPA) and had a higher level of psychological well-being than those students who never participated in ECPA. The longitudinal approach and mixed method design of this study, which produced a triangulation of results from self-report questionnaires, pedometers and focus groups adds strength to the validity of these findings. It also demonstrates that ECPA participation may actually depend on what school students attend and how physically competent they perceive themselves to be.

6.2 Future Research Recommendations

This study has highlighted the need for further investigation into the PA behaviour of adolescents and the impact participation can have on their psychological well-being. The following recommendations could assist in improving our understanding of adolescent PA behaviour and attitudes towards PA and ECPA.

- This study has shown the value of pedometers as an effective measure of PA levels in adolescents. In order to establish if adolescents are achieving the correct number of steps daily, then clear recommended guidelines need to be established for this age group. At the moment, it is very unclear as to how many steps adolescents should be taking daily to achieve health benefits. There are recommendations for children (males, aged 6-12 years, $\geq$ 15,000 steps daily) and for adults (aged >18 years, 10,000 steps daily, Tudor-Locke *et al*, 2004), however, no official guidelines exist for adolescents (aged 12-18 years). This demands attention and will decrease the value of pedometers as an accurate PA measuring tool until clear guidelines are made available. We know that children and adolescents are recommended to engage in $\geq$ 60 minutes MVPA daily, however, to improve the accuracy and effectiveness of using pedometers, we need clear, accurate recommendations for the number of steps adolescents should be taking on a daily basis.

- The majority of studies investigating PA behaviour in adolescents are cross-sectional. In order to effectively track the PA and ECPA behaviour of adolescents, a longitudinal approach to research needs to be encouraged. This is vital with adolescents, as research trends have shown that PA, PE and ECPA participation levels decrease with an increase in age during adolescence. A strength of this present study was that assessment was carried longitudinally over a full academic year, however, a longitudinal assessment over a number of years may provide more of an understanding as to why and when adolescents begin to decrease their PA and ECPA levels of participation.

- Future studies in this area need to use a mixed quantitative/qualitative design in order to produce a clear and accurate set of results relating to adolescents and their participation levels in and attitude towards ECPA and PA. The combination of self-report questionnaires, objective measures (pedometers) and focus group discussions will allow researchers to check for consistency in findings. The focus group discussions have the potential to be of most importance. Focus group

discussions have the potential to provide a real insight to the honest views and attitudes of adolescents on PA and ECPA that may not so accessible via self-report measures alone.

- In order for ECPA to become more effective, post-primary schools must acknowledge the value of an ECPA programme. ECPA needs to become part of school policy, alongside PE in the promotion of PA for post-primary school students. Schools have the best opportunity to reach the largest number adolescents for the most amount of time during the week throughout the academic year. This is a window for opportunity. With many schools not allocating the recommended 120 minutes of PE per week for all post-primary students, and many others not even having a fully qualified PE teacher on the staff, ECPA in schools can provide opportunities for students to get physically active during the school day. Schools and principles need to need to acknowledge the availability of ECPA programmes and encourage teachers, other than just the PE staff, to get involved in organising or supervising ECPAs at lunchtimes or after school. The findings from the present study show that more students participating in ECPA could potentially be to the benefit of schools in terms of students having an improved psychological well-being, working harder in class, lower absenteeism rates and increasing the appeal of school. These potential benefits could be particularly important for 'DEIS' schools such as the ones involved in the present study.

- Teachers, in particular PE teachers, have a huge role to play in the promotion of ECPA in post-primary schools. PE teachers have greatest access to students' time in relation to PA, therefore their role is crucial. To go alongside PE programmes, ECPA needs to be available to all students in post-primary schools. The research shows that PE programmes are still dominated by competitive, team games and ECPA seems to follow suit. The regular ECPA participants in this study highlighted the importance of ECPA participation to them, demonstrating the value of ECPA to many students. However, the students who reported never

participating in ECPA reported a lack of competence as the main barrier to participation. This suggests that the emphasis of ECPA in school is on competition. Therefore, PE teachers need to ensure that some of the ECPAs on offer are based around fun, enjoyment and just getting physically active to encourage more students to get involved. There is a place for the more competition based ECPAs, as the number of regular participants from this study showed, however, to meet the needs of the students who are less competent at PA, a greater variation in ECPA needs to be available. For those that just want to be active or feel part of something within PA in school, in-house tournaments or non-competitive lunchtime or after school ECPAs could be organised. To achieve this, more teachers, other than just the PE staff in schools will need to make themselves available to help organise, run or supervise ECPAs. PE teachers could also look for support from local sports clubs, sports development officers or local sports partnerships to increase the amount of ECPA they are able to offer all students in schools. The present study found the school students attended was one of only two factors that predicted participation in ECPA. This emphasises how important a role PE teachers have in organising ECPA programmes and finding the support to actually run them.

Another potentially important initiative for PE teachers to get their school involved in is the 'Active Schools Flag'. This Department of Education and Skills initiative (2009) looks to reward those schools showing a strong commitment to PE and ECPA. The flag, however, is extremely difficult to achieve, highlighted by the fact that so few post-primary schools have been awarded the flag. The Department should be looking at making this flag more achievable for schools, rather than putting it out of most schools reach. One of the biggest difficulty schools have in meeting the criteria to obtain the flag is the requirement that all students in post-primary school receive at least 120 minutes of PE per week. Research has shown that many schools in Ireland are not allocating this amount of time for junior or senior cycle students. If the 120 minutes of PE per week are not achieved, ECPAs in schools or any other PA

promotion are not even taken into consideration. The amount of ECPA on offer in schools should be acknowledged, even if the amount of PE allocated is not the required amount. Schools should be rewarded for giving their students opportunities to be physically active and promoting a physically active lifestyle. This is something the Department of Education and Skills in Ireland need to have a closer look at.

Overall, the PE teacher has a vital role to play in the promotion of PA in the post-primary school setting. The focus of ECPAs, competitive or not, should be on providing an enjoyable, friendly atmosphere for students, in which everyone participating can be made feel welcome and competent in their own physical ability, whatever their level of physical ability may be. This could potentially assist in the continuation of adolescent's participation in PA going into adulthood. The importance of the PE teachers influence on the PA behaviour of adolescents should not be underestimated and more research needs to target PE teachers and their role in getting adolescents in schools physically active, particularly for students from disadvantaged areas.

- Parents also have an important role to play in the promotion of ECPA participation for adolescents. The results from this study showed that the regular ECPA participants were influenced by positive support from parents. Parents need to be made aware of the positive role that they can play in the PA behaviour of their children. They could be encouraged to volunteer their help in supervising after school ECPAs or just by verbally encouraging their children to take part in ECPA, regardless of their ability in it. Positive support, as highlighted by regular ECPA participants, can have a huge bearing on adolescents ECPA participation levels and on their psychological well-being.

- Other recommendations for future research from this study would be to repeat the same study again, except with females of the same age. This would allow comparisons to be made between levels of PA, ECPA, impact on psychological

well-being and motivations and barriers to ECPA participation. Again, this would aid our understanding of adolescents' attitudes towards PA and ECPA from a female point of view. The present study was also a relatively small cohort of students from only four schools. Future research would need to investigate the relationship between ECPA participation and the psychological well-being of students from all over Ireland to get a clear picture of the impact of ECPA participation on adolescents in this country. A larger age range of students (aged 12-18 years) would also be worthwhile given the research trends of a decrease in adolescents PA levels as they increase in age.

Overall, the study has brought attention to the possible value of ECPA participation to adolescent males (aged 12-15 years) in post-primary schools. The low levels of research into ECPA in post-primary schools and its potential impact on adolescents highlight the lack of value placed on ECPA in this country. The findings from this study have shown it is an area worth investigating further. The results show that even sometimes (once a week) participation in ECPA can be beneficial to adolescent males in terms of daily PA levels and their psychological well-being. The results also highlight barriers to participation in the form of a lack of perceived physical competence and peer rejection. The main recommendation from this study is that ECPA can play a crucial role in the promotion of PA for adolescent males (aged 12-15 years) from disadvantaged communities. ECPA must gain more recognition and schools/PE teachers need to foster a motivational climate in ECPAs where enjoyment of participation, friendship and competence are emphasised. This study supports continued efforts in promoting the importance and value of ECPA in post-primary schools.

References

Abbott, R.A., Macdonald, D., Nambiar, S. and Davies, P.S.W. (2009). The association between walking to school, daily step counts and meeting step targets in 5-17 year old Australian children. *Pediatric Exercise Science*, 21, 520-532.

Alexander, L.M., Inchely, J., Todd, J., Currie, D., Cooper, A.R., Currie, C. (2005). The broader impact of walking to school among adolescents: seven-day accelerometry based study. *British Medical Journal*, 331, 1061.

Allen, J.B. (2003). Social motivation in youth sport. *Journal of Sport and Exercise Psychology*, 25, 551-567.

Allender, S., Cowburn, G. and Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: a review of qualitative studies. *Health Education Research*, 21(6), 826-835.

Altintas, A. and Asci, F.H. (2008). Physical self-esteem of adolescents with regard to physical activity and pubertal status. *Pediatric Exercise Science,* 20, 142-156.

Atkin, A.J., Gorely, T., Biddle, S.J.H., Marshall, S.J. and Cameron, N. (2008). Critical hours: Physical activity and sedentary behaviour of adolescents after school. *Pediatric Exercise Science*, 20, 446-456.

Babkes, M.L. and Weiss, M.R. (1999). Parental influence on cognitive and affective responses in children's competitive soccer participation. *Pediatric Exercise Science*, 11, 44-62.

Badami, R., Mousavi, M.V., Wulf, G. and Namazizadeh, M. (2011). Feedback after good versus poor trials affects intrinsic motivation, *Research Quarterly for Exercise and Sport*, 82(2), 360-364.

Bailey, R. (2005). Evaluating the relationship between physical education, sport and social inclusion. *Educational Review*, 57(1), 71-88.

Bailey, R. and Dismore, H. (2006). A review of research on the nature and function of sport pedagogy 2004-2005. *International Journal of Physical Education*, 4, 144-148.

Bandura, A. (1997). Self-efficacy: The exercise of control. *American Journal of Health Promotion*, 12, 8-12.

Bass, D. and Cale, L. (1999). Promoting physical activity through the extra-curricular programme. *European Journal of Physical Education, 4*(1), 45-64.

Bassett, D.R.J., Ainsworth, B.E., Legett, S.R., Mathien, C.A., Main, J.A., Hunter, D.C., et al. (1996). Accuracy of five electronic pedometers for measuring distance walked. *Medicine and Science in Sports and Exercise*, 28, 1071-1077.

Baumgartner, T.A., Jackson, A.S., Maher, M.T. and Rowe, D.A. (2007) *Measurement for Evaluation, in Physical Education and Exercise Science*, New York: McGraw-Hill.

Belton, S. and MacDonncha, C. (2010). Reliability and validity of a new physical activity self-report measure for younger children. *Measurement in Physical Education and Exercise Science*, 14(1), 15-28.

Belton, S., Brady, P., Meegan, S. and Woods, C. (2010). Pedometer step count and BMI of Irish primary school children, aged 6-9 years. *Preventive Medicine*, 50, 189-192.

Berger, B.G., Pargman, D. and Weinberg, R.S. (2007). Foundations of Exercise Psychology, 2nd Edition, USA: Sheridan Books.

Berndt, T.J. (1989) Obtaining support from friends during childhood and adolescence. In D.Belle (ed), *Children's social network and social support*, p.308-331, New York, John Wiley.

Biddle, S. and Mutrie, N. (2001). *Psychology of Physical Activity*. London: Routledge.

Biddle, S., Fox, K. and Boutcher, S. (2000). *Physical and Psychological Well-Being*, London: Routledge.

Biddle, S., Sallis, J. and Cavill, N. (1998). *Young and Active – Young People and Health Enhancing Physical Activity – Evidence and Implications*. London: Health Education Authority.

Biddle, S.J.H. (1999). The motivation of pupils in physical education. In C. Hardy and M. Mawer (eds), *Learning and teaching in physical education* (pp. 105-125), London: Farmer Press.

Biddle, S.J.H. and Asare, M. (2011). Physical activity and mental health in children and adolescents: a review of reviews. *British Journal of Sports Medicine*, 45, 886-895.

Biddle, S.J.H., Whitehead, S.H., O'Donovan, T.M. and Nevill, M.E. (2005). Correlates of participation in physical activity for adolescent girls: A systematic review of recent literature. *Journal of Physical Activity and Health*, 2, 423-434.

Blair, S.N., Clark, D.G., Cureton, K.J. et al. (1989). Exercise and fitness in childhood: implications for a lifetime of health. In: C.V. Gisolfi, D.R. Lamb. (eds). *Perspectives in exercise science and sports medicine*, New York: McGraw-Hill, 314, 605-613.

Blanskby, B.A. and Whipp, P. (2004). Healthy mind in a healthy body: Engaging young people in physical activity through school health and physical education. In R. Galbally (Ed.) *Healthy minds, healthy bodies, healthy nation: Connecting education and health*, 34-42, Melbourne, Australian College of Educators.

Brown, H.L., Salmon, J., Pearson, N. and Hume, C. (2013). *KAPS: An intervention targeting the mediators of children's physical activity*. A paper resented at ISBNPA, may, 2013,p.121.

Bruner, M.W., Chad, K.E., Beattie-Flath, J.A., Humbert, M.L., Verrall, T.C., Vu, L. and Muhajarine, N. (2009). Examination of physical activity in adolescents over the school year. *Pediatric Exercise Science*, 21, 421-435.

Brustad, R.J. (1993). Who will go out and play? Parental and psychological influences on children's attraction to PA. Pediatric Exercise Science, 5(3), 210-223.

Brustad, R.J. (1996). Attraction to physical activity in urban schoolchildren: Parental socialisation and gender influences. *Research Quarterly for Exercise and Sport*, 67 (3), 316-323.

Cale, L. (2000). Physical activity promotion in secondary schools. *European Physical Education Review*, 6 (1), 71-90.

Cale, L. and Harris, J. (2005) *Exercise and young people, issues, implications and initiatives*. New York: Palgrave Macmillan.

Calfas, K.J. and Taylor, W.C. (1994). Effects of physical activity on psychological variables in adolescents. *Pediatric Exercise Science*, 6: 406-423.

Canadian Fitness and Lifestyle Research Institute (2009). Kids can PLAY! Activity levels of Canadian children and youth, Ottawa.

Capel, S. (1997). *Learning to teach physical education in the secondary school*. London: Routledge.

Carson, V. and Spence, J.C. (2010). Seasonal variation in physical activity among children and adolescents: A Review. *Pediatric Exercise Science*, 22, 81-92.

Casperson, C.J., Powell, K.E. and Christensen, G.M. (1985). Physical activity, exercise and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports, 100*, 126-131.

Cavill, N., Biddle, S.J.H. and Sallis, J.F. (2001). Health enhancing physical activity for young people: Statement of the United Kingdom expert consensus conference. *Pediatric Exercise Science,* 13, 12-25.

Central Statistics Office (2006). *Census of population, 2006, volume 12, travel to work. School and college*. Available at www.cso.ie.

Children and young People - The importance of physical activity. *European Heart Health Initiative*, December, 2001.

Cleland, V., Venn, A., Fryer, J., Dwyer, T. and Blizzard, L. (2005). Parental exercise is associated with children's extra-curricular sports participation and cardiorespiratory fitness: A cross-sectional study. *International Journal of Behavioural Nutrition and Physical Activity*, 2(3).

Coe, D.P., Pivarnik, M., Womak, C.J., Reeves, M.J. and Malina, R.M. (2006). Effect of physical education and activity levels on academic achievement in children. *Medicine and Science in Sports and Exercise,* 38(8), 1515-1519.

Cohen, L. and Manion, L. (1994). *Research methods in Education, 4rth Edition*. London:Routledge.

Collins, K., McAlreavy, G. and Adamson, G. (2004). *Bullying in schools: A Northern Ireland study*. School of Psychology, University of Ulster.

Cooper, A.R., Page, A.S., Foster, L.J., Qahwaji, D. (2003). Commuting to school: Are children who walk more physically active? *American Journal of Preventative Medicine*, 25(4), 273-276.

Corbin, C.B. and Pangrazi, R.P. (2003). Guidelines for appropriate physical activity for elementary school children. Reston, VA: NASPE.

Cox, R.H (2002) Sport Psychology, concepts and applications, 5th Edition. New York: McGraw-Hill.

Craig, C.L., Cameron, C., Griffiths, J.M. and Tudor-Locke, C. (2010). Descriptive epidemiology of youth pedometer-determined physical activity: CANPLAY. *Medicine and Science in Sports and Exercise*, 42, (9), 1639-1643.

Creswell, J. W. and Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oakes, California: Sage.

Crocker, P., Hoar, S., McDonough, M., Kowalski, K. and Niefer, C. (2004). Emotional experience in youth sport. In M. Weiss (ed), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 197-222). Morgantown WV: Fitness Information Technology.

Crocker, P.R., Eklund, R.C. and Kowalski, K.C. (2000). Children's physical activity and physical self-perceptions. *Journal of Social Sciences*, 18 (6): 383-394.

Crouter, S.E., Schneider, P.L., Karabulut, M. and Bassett, D.R. (2003). Validity of 10 electronic pedometers for measuring steps, distance, and energy cost. *Medicine and Science in Sports and Exercise*, 35, 1455-1460.

Currie, C. (2012). Social determinants of health and well-being among young people. Health behaviour in school-aged children (HBSC) study: International report from the 2009/2010 survey. Copenhagen, WHO regional office for Europe.

Curtner-Smith, M., Sofo, S., Chouinard, J. and Wallace, S. (2007) Health-promoting physical activity and extra-curricular sport. *European Physical Education Review*, 13(2), 131-144.

De Roiste, A. and Dineen, J. (2005). Young Peoples views about opportunities, barriers and supports to recreation and leisure: *A research report by Cork Institute of Technology on behalf of the National Children's Office.* Dublin: National Children's Office.

Department of Education and Skills (2009). Available at www.education.ie.

Department of Health (2004). At least 5 a week: Evidence on the impact of physical activity and its relationship to health – A report by the Chief Medical Officer, London.

Department of Health and Children (2005). Obesity: The Policy Changes. Report of the National Taskforce on Obesity, Dublin: The Stationary Office.

Department of Health and Children (2009). *Get Ireland active: The national guidelines on physical activity for Ireland*. Dublin, Health Service Executive.

Department of Health and Children (2010) Health in Ireland, Key Trends, Brunswick Press Ltd.

Department of Health and Children, State of the Nation's Children, December, 2010, Government Publications, Dublin.

Department of Health and Science (2003). *Junior Cycle Physical Education*. Dublin: The Stationery Office.

Department of Transport (2009). Smarter Travel: A Sustainable Transport Future. A New Transport Policy for Ireland 2009-2020. Dublin, Government Publications Office.

DiLorenzo, T.M., Stucky-Ropp, R.C., Vander Wal, J.S. and Gotham, H.J. (1998). Determinants of exercise among children. II. A longitudinal analysis. *Preventive Medicine*, 27(3), 470-477.

Dollman, J., Olds, T.S., Esterman, A. and Kupke, T. (2010). Pedometer Step Guidelines in Relation to Weight Status Among 5-16 Year Old Australians, *Pediatric Exercise Science*, 22, 288-300.

Eaton, D.K. (2009). Youth risk behaviour surveillance survey. Centres for Disease Control and Prevention. United States.

European Heart Network (2001). *Children and young people – The importance of physical activity*. Brussels, Belgium: published in the context of the European Heart Health Initiative.

Fahey, T., Delaney, L. and Gannon, B. (2005). *School children and sport in Ireland*. Dublin: Economic and Social Research Institute.

Fairclough, S.J. (2003). Physical activity levels during key stage 3 physical education. *British Journal of Teaching Physical Education*, 34, 40-45.

Fairclough, S.J. and Stratton, G. (2006). Effects of a physical education intervention to improve student physical activity levels. *Physical Education and Sport Pedagogy*, 11(1), 29-44.

Finn, J.D. (1989). Withdrawing from school. *Review of Educational Research*, 59(2), 117-142.

Fisher, A., Grant, S., Kelly, L.A., Montgomery, C., Paton, J.Y., Reilly, J.J. and Fox, K.R. (1997). *The physical self and processes in self-esteem development. The physical self: From motivation to well-being*, Champaign, IL: Human Kinetics.

Fox, K.R. (2000). Self-esteem, self-perceptions and exercise. *International Journal of Sport Psychology*, 31, 228-240.

Green, K. and Hardman, K. (2005). *Physical Education – Essential Issues*, London: Sage Publications.

Gustafson, S.L. and Rhodes, R.E. (2006). Parental correlates of physical activity in children and early adolescents. *Sports Medicine*, 36, 79-97.

Hallal, P.C., Victoria, C.G., Azevedo, M.R. and Wells, J.C.K. (2006). Adolescent physical activity and health: A systematic review. *Sports Medicine*, 36(12): 1019-1030.

Hardman, K. (2007). Current situation and prospects for physical education in the European union. Available at www.europarl.europa.eu.

Harter, S. (1978). Effective Motivation Reconsidered: Toward A Developmental Model. *Human Development*, 21, 34-64.

Harter, S. (1981). The development of competence motivation in the mastery of cognitive and physical skills: Is there still a place for joy? In C.H. Nadeau (ed), *Psychology of motor behaviour and sport* (pp. 3-29). Champaign, IL: Human Kinetics.

Harter, S. (1985). *Manual for the self-perception profile for children*. Denver, CO: University of Denver.

Harter, S. (1990) Self and identity development, in Feldman, S.S. and Elliott, G.R. (eds). *At the threshold: The developing adolescent*, 352-387, Cambridge: Harvard University Press.

Hashim, H., Grove, R. and Whipp, P. (2008). Validating the youth sport enjoyment construct in high school physical education. *Research Quarterly for Exercise and Sport*, 79(2), 183-194.

Hendry, L. (1989). The influence of adults and peers on adolescent lifestyles and leisure-styles, in Hurrelman, K. and Engel, U. (eds), *The social world of adolescents*, New York: Walter De Gruyter.

Hendry, L., Shucksmith, J., Love J. and Glendinning, A. (1993). Young Peoples Leisure and Lifestyles, London: Routledge.

Heyward, V. (2010). Advances in Fitness Assessment and Exercise Prescription, 6th Edition. USA: Burgess Publishing Company.

Hiland, T.A., Stratton, G., Vinson, D. and Fairclough, S. (2009). The physical education predisposition scale: Preliminary development and validation. *Journal of sports sciences*, 27(14), 1555-1563.

Hilland, T.A., Ridgers, N.D., Stratton, G. and Fairclough, S.J. (2011). Associations between selected demographic, biological, school environmental and physical education based correlates, and adolescent physical activity. *Pediatric Exercise Science*, 23, 61-71.

Hopper, B. (2005). Confronting one's own demons. Exploring the needs of non-specialist primary initial teacher trainees in PE. *The British Journal of Teaching Physical Education*, 36(1), 6-10.

Horn, N.J. and Harris, A. (2002). Perceived competence in young athletes: Research findings and recommendations for coaches and parents. In F.L. Smoll and R.E. Smith (eds), Children and Youth in Sport: A Biopsychosocial Perspective, 2nd edition, pp. 435-464, Dubuque, IW: Kendall-Hunt.

Hughes, A.M., Keane, S., Lyons, D., Quinn, S. and McPhail, A. (2006). Lifelong Involvement in Sport and Physical Activity: The LISPA Model. The Irish Sports Council. Available at www.irishsportscouncil.ie.

Inchley, J., Kirby, J. and Currie, C. (2011). Longitudinal changes in physical self-perceptions and associations with physical activity during adolescence. *Pediatric Exercise Science*, 23, 237-249.

Institute of Youth Sport (1999). *The Girls in Sport Project*, Loughborough, England: IYS.

Irish Universities Nutrition Alliance (2008). National Teens Food Survey. Available at www.iuna.net.

Jago, R., Macdonald-Wallis, K., Thompson, J.L., Page, A.S., Brockman, R. and Fox, K.R. (2011). Better with a buddy: Influence of best friends on children's physical activity. *Medicine and Science in Sports and Exercise*, 43(2), 259-265.

Kimiecik, J.C. and Horn, T.S. (1998). Parental beliefs and children's moderate to vigorous physical activity. *Research Quarterly for Exercise and Sport*, 69(2), 163-175.

Kirk, D. (2005). Physical education, youth sport and lifelong participation: The importance of early learning experiences. *European Physical Education Review*, 11(3), 239-255.

Kremer, J., Trew, K. and Ogle, S. (2000). *Young Peoples Involvement in Sport*. London: Routledge.

Layte, R. and McCrory, C. (2011). *The Growing up in Ireland report: A national longitudinal study of children*. Department for Children and Youth Affairs, Dublin: Government Publications.

Lincoln, Y. S. and Guba, E. G. (1985). Establishing trustworthiness. In Y. S. Lincoln and E. G. Guba (Eds.), *Naturalistic Inquiry* (3rd ed., pp. 289-331). Sage Publications.

Lowry, R., Wechsler, H., Kann, L. and Collins, J.L. (2001). Recent trends in participation in physical education among U.S. high school students. *Journal of School Health*, 71(4), p.145-152.

Lubans, D.R., Morgan, P.J., Callister, R. and Collins, C.E. (2009). Effects of integrating pedometers, parental materials and email support within an extracurricular school sport intervention. *Journal of Adolescent Health*, 44, 176-183.

Luikkonen, J., Vanden Auwelle, Y., Vereijken, B., Alfermann, D., Theodorakis, Y. (2007). *Psychology for Physical Educators, 2nd edition*, USA: Human Kinetics.

Lunn, P., Layte, R. and Watson, D. (2007). *The Irish Sports Monitor: First Annual Report*. Dublin: Economic and Social Research Institute and The Irish Sports Council.

MacNamara, A., Collins, D., Bailey, R., Toms, M., Ford, P. and Pearce, G. (2011). Promoting lifelong physical activity and high level performance: realising an achievable aim for physical education. *Physical Education and Sport Pedagogy*, 16(3), 265-278.

MacPhail, A. (2011). Youth voices in PE and sport: What are they telling us and what do they say they need? In K. Armour (ed), *Sport Pedagogy: An Introduction for Teaching and Coaching*, pp.105-115, London: Prentice Hall.

MacPhail, A. and Halbert, J. (2005). The implementation of a revised physical education syllabus in Ireland: Circumstances, rewards and costs. *European Physical Education Review*, 11(3), 287-308.

MacPhail, A., Gorely, T., Kirk, D. and Kinchin, G. (2008). Children's experiences of fun and enjoyment during a season of sport education. *Research Quarterly for Exercise and Sport*, 79(3), 344-355.

Marsh, H.W. (1990). *Self-Description Questionnaire 1 (SDQ1) Manual*. Sydney: University of Australia.

McAuley, E., Duncan, T.E. and Tammen, V.V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport,* 60, 48-58.

McCarthy, P.J. and Jones, M.V. (2007). A qualitative study of sport enjoyment in the sampling years. *The sport psychologist*, 21, 400-416.

McCormack, G.R., Rutherford, J., Giles-Corti, B., Tudor-Locke, C. and Bull, F. (2011). BMI -Referenced cut-points for recommended daily pedometer-determined steps in Australian children and adolescents. *Research Quarterly for Exercise and Sport, American Alliance for Health, Physical Education, Recreation and Dance*, 82(2), 162-167.

McElroy, M. (2002). *Resistance to Exercise: A Social Analysis of Inactivity*. Champaign, IL: Human Kinetics.

McNamara, A., Collins, D., Bailey, R., Toms, M., Ford, P. and Pearce, G. (2011). Promoting lifelong physical activity and high level performance: realising an achievable aim for physical education. *Physical Education and Sport Pedagogy*, 16 (3), 265-278.

McNeill, M. and Wang, C.K.J. (2005). Psychological profiles of elite sports players in Singapore. *Psychology of Exercise and Sport*, 6, 117-128.

Merriam, S.B. (1998). *Qualitative research and case study applications in education, 2nd edition*, San-Francisco: Jossey-Bass.

Moore, J.B., Mitchell, N.G., Bibeau, W.S. and Bartholomew, J.B. (2011) Effects of a 12-Week Resistance Exercise Programme on Physical-Perceptions in College Students. *Research Quarterly for Exercise and Sport, American Alliance for Health, Physical Education, Recreation and Dance*, vol.82, No.2., pp.291-301.

Moore, J.B., Mitchell, N.G., Bibeau, W.S. and Bartholomew, J.B. (2011). Effects of a 12 week resistance program on physical self-perceptions in college students. *Research Quarterly for Exercise and Sport*, 82(2), 291-301.

Morgan, C.F., Graser, S.V. and Pangrazi, R.P. (2008). A prospective study of pedometer-determined physical activity and physical self-perceptions in children. *Research Quarterly for Exercise and Sport*, 79(2), 133-140.

Motl, R.W., Birnbaum, A.S., Kubik, M.Y. and Dishman, R.K. (2004). Naturally occurring changes in physical activity are inversely related to depressive symptoms during early adolescence. Psychosomatic Medicine, 66 (3): 336-352.

Motl, R.W., Dishman, R.K., Saunders, R., Dowda, M., Felton, G. and Russell, R.P. (2001). Measuring enjoyment of physical activity in adolescent girls. *American Journal of Preventative Medicine*, 21(2), 110-116.

Mulvihill, C., Rivers, K. and Aggleton, P. (2000). *Physical activity 'at our time'*. London, Health Education Authority.

Murtagh, E.M. and Murphy, M.H. (2011). Active travel to school and physical activity levels of Irish primary schoolchildren. *Pediatric Exercise Science*, 23, 230-236.

Mutrie, N. and Parfitt, G. (1998). Physical activity and its link with mental, social and moral health in young people. In: S. Biddle, J. Sallis and N. Cavill (eds). *Young and active? Young people and health-enhancing physical activity: evidence and implications*, London: Health Education Authority, 49-68.

National Health Service (2008). *Statistics on obesity, physical activity and diet: England*. The Information Centre, Lifestyles Statistics. Available at www.aso.org.uk.

National Heart Alliance (2006). *Building young hearts: Physical activity, young people and the physical environment*. Dublin: Irish Heart Foundation.

National Heart Alliance (2010). *Building young hearts: Physical activity, young people and the physical environment*. Dublin: Irish Heart Foundation.

Nic Gabhainn, S., Gavin, A., Kelly, C. and Molcho, M. (2012). *The Irish Health Behaviour in school-aged children (HBSC) study 2010*. Dublin: Department of Health.

Nic Gabhainn, S., Kelly, C. and Molcho, M. (2007). *HSBC Ireland 2006: National Report of the 2006 Health Behaviour in School-aged Children in Ireland 2006*. Dublin, Department of Health and Children.

Nic Gabhainn, S., Kelly, C. and Molcho, M. (2009). *Health Behaviour in School-aged Children (HBSC) Ireland 2006*, Middle childhood study: Socio-demographic patterns in the health behaviours, health outcomes and social contexts of young people's health. Dublin: Department of Health.

O'Dea, J.A. (2003). Why do kids eat healthful food? Perceived benefits of and barriers to healthful eating and physical activity among children and adolescents. *Journal of Diet Association*, 103, 497-504.

O'Sullivan -Ryan, M. (2008). Children, young people and physical activity - An overview, national council for exercise and fitness, national fitness news, 10(6), 11-13.

Ogden, C. and Carroll, M. (2010). *Prevalence of obesity among children and adolescents; US Trends 1963-1965 Through 2007-2008*, CDC.

OECD (2012). Equity and Quality in Education: Supporting disadvantaged students and schools. Spotlight report: Ireland, available at www.oecd.org/edu/equity.

Ormston, R. (2010). Physical activity, in: *The Scottish Health Survey*, 2009, vol 1, chapter 6, C. Bromley, L. Given and R. Ormston (eds). Edingburgh: Main Report. The Scottish Government, 2010.

Panter, J., Jones, A., Van Sluijs, E. and Griffin, S. (2011). The Influence of distance to school on the associations between active commuting and physical activity. *Pediatric Exercise Science*, 23, 72-86.

Pate, R.R., Davis, M.G., Robinson, T.N., Stone, E.J., McKenzie, T.L., Young, J.C. *et al*. (2006). Promoting physical activity in children and youth, Circulation, 114, 1214-1224.

Paxton, R.J., Nigg, C., Motl, R.W., Yamashita, M., Chung, R., Battista, J. and Chang, J. (2008). Physical activity enjoyment scale short form - Does it fit for children? *Research Quarterly for Exercise and Sport*, 79(3), 423-427.

Penney, D. and Harris, J. (1997). Extra-curricular physical education: More of the same for the more able. *Sport, Education and Society*, 2 (1), 41-54.

Pieron, M., Cloes, M., Delfosse, C. and Ledent, M. (1996). An investigation of the effects of daily physical education in kindergarden and elementary schools. *European Physical Education Review*, 2, 116-132.

Pieron, M., Delfosse, C., Ledent, M. And Cloes, M. (2001). Motivation of schoolchildren for physical education, comparison of high and low achievers. University of Liege: AIESEP.

Pratt, M., Macera, C.A. and Blanton, C. (1999). Levels of physical activity and inactivity in children and adults in the United States: Current evidence and research issues. *Medicine and Science in Sports and Exercise*, 31, 526-533.

Prochaska, J., Sallis, J., Slyman, D. and McKenzie, T. (2003). A longitudinal study of children's enjoyment of physical education. *Pediatric Exercise Science*, 15, 170-178.

Prochaska, J.J., Sallis, J.F. and Long, B. (2001). A physical activity screening measure for use with adolescents in primary care. *Archives of Pediatric and Adolescent Medicine*, 155, 554-559.

Riddoch, C. (1998). Relationship between physical activity and health in young people, in S. Biddle, J. Sallis and N. Cavill (eds) *Young and active? Young People and Health Enhancing Physical Activity: Evidence and Implications*, 17-48, London: Health Education Authority.

Riddoch, C.J., Anderson, L.B., Wedderkopp, N., Harrow, M., Klasson-Heggeboe, L., Sardinah, L.B., Cooper, A.R. and Ekelund, U. (2004). Physical activity levels and patterns of 9 and 15 year old European children. Medicine and Science in Sports and Exercise, 36, 86-92.

Rittenhouse, M., Salvey, S.J. and Barkley, J.E. (2011). The Effect of Peer Influence on the Amount of Physical Activity Performed in 8-12 Year Old Boys. *Pediatric Exercise Science*, 23, 49-60.

Rowe, D.A., Raedeke, T.D., Wiersma, L.D. and Mahar, M.D. (2007). Investigating the youth physical activity promotion model: Internal structure and external validity evidence for a potential measurement model. *Pediatric Exercise Science*, 19, 420-435.

Sabiston, C.M. and Crocker, P.R.E. (2008). Exploring self-perceptions and social influences as correlates of adolescent leisure-time physical activity. *Journal of Sport and Exercise Psychology*, 30, 3-22.

Sacheck, J.M., Nelson, T., Ficker, L., Kafka, T., Kuder, J. and Economos, C.D. (2011). Physical activity during soccer and its contribution to physical activity recommendations in normal weight and overweight children. *Pediatric Exercise Science*, 23, 281-292.

Sallis, J., Prochaska, J.J., Taylor, W., Hill, J. and Geraci, J. (1999). Correlates of physical activity in a national sample of girls and boys in grades four through twelve. *Health Psychology*, 410-415.

Sallis, J.F. 1991. Self-Report measures of children's physical activity. *Journal of School Health*, 61, 215-219.

Sallis, J.F. and McKenzie, T.L. (1991). Physical education's role in public health. *Research Quarterly for Exercise and Sport*, 62, 124-137.

Sallis, J.F., Condon, S.A., Goggin, K.J., Roby, J.J., Kolody, B. and Alcaraz, J.E. (1993). The development of self-administered physical activity surveys for 4th grade students. *Research Quarterly for Exercise and Sport*, 64, 25-31.

Sallis, J.F., Prochaska, J.J. and Taylor, W.C. (2000). A review of correlates of physical activity of children and adolescents, *Medicine and Science in Sports and Exercise*, 32(5), 963-975.

Scanlon, T.K. and Lewthwaite, R. (1986). Social psychology aspects of competition for male youth sports participants: IV. Predictors of enjoyment. *Journal of Sport psychology*, 8, 25-35.

Scanlon, T.K., Carpenter, P.J., Lobel, M. and Simons J.P. (1993). Sources of enjoyment for youth sport athletes. *Pediatric Exercise Science*, 5, 275-292.

Schmalz, D.L., Deane, G.D., Birch, L.L. And Davison, K.K. (2007). A longitudinal assessment of the links between physical activity and self-esteem in early adolescent non-Hispanic females. *Journal of Adolescent Health*, 41, 559-565.

Schneider, P.L., Crouter, S.E., Lukajic, O. and Bassett, D.R. (2003). Digital pedometers: Checking calibration prior to use in research. *Medicine and Science in Sports and Exercise, 35* (Suppl.1), S299.

Scottish Executive (2003). *Let's make Scotland more active – A strategy for physical activity*. Edinburgh: The Stationary Office.

Shephard, R.J. (1996). Habitual physical activity and academic performance. *Nutrition Review*, 54, 32-36.

Shephard, R.J. and Trudeau, F. (2000). The legacy of physical education: Influences on adult lifestyle. *Pediatric Exercise Science*, 12, 34-50.

Siedentop, D. (1998). What is sport education and how does it work? *Journal of physical education, recreation and dance*, 69(4), 18-20.

Silva, P., Sousa, M., Aires, L., Seabra, A., Ribeiro, J., Welk, G. and Mota, J. (2010). Physical activity patterns in Portuguese adolescents: The contribution of extra-curricular sports. *European Physical Education Review*, 16, 171.

Sirad, J.R, and Pate, R.R. (2001). Physical activity assessment in children and adolescents, review article, *Sports Medicine* (Auckland), 31(6), p.439-454.

Smith, A. and Biddle, S. (2008). *Youth physical activity and sedentary behaviour, challenges and solutions*. Human Kinetics: USA.

Smith, A., Thurston, M., Lamb, K. and Green, K. (2007) Young peoples participation in national curriculum physical education: A study of 15-16 yr olds in North-West England and North-East Wales. *European Physical Education Review*, 13(2), 165-194.

Smith, A., Thurston, M., Lamb, K. and Green, K. (2007) Young peoples participation in extra-curricular physical education: A study of 15-16 yr olds in Northwest England and North-East Wales. *European Physical Education Review*, 13(3), 339-368.

Smith, A.L. (1999). Perceptions of peer relationships and physical activity participation in early adolescence. *Journal of Sport and Exercise Psychology*, 21(4), 329-350.

Sonstroem, R.J. (1997). The physical self-system: A mediator of exercise and self-esteem. In K.R. Fox (ed), *The physical self: From motivation to well-being* (pp3-26). Champaign, IL: Human Kinetics.

Sport England (2003b). *Young People and Sport in England, 2002*. London: Sport England.

Sports Council for Wales (2006). Active Young People: Sports Update No. 58. Cardiff: Sports Council for Wales.

State of the Nation's Children, Department of Health and Children, December 2010. Dublin: Government Publications.

Strong, W.B., Malina, R.M., Blimkie, C.J.R., Daniels, C.J.R., Dishman, R.K., Gutin, B. et al. (2005). Evidence based physical activity for school-age youth. *The Journal of Pediatrics*, 146 (6), 732-737.

Tannehill, D., McPhaill, A., Walsh, J. and Woods, C. (2011). *What young people say about physical activity: The children's sport participation and physical activity study (CSPPA).* University of Limerick.

Tashakkori, A. and Teddlie, C. (2003). *Handbook of mixed methods in social and behavioural research*. Thousand Oaks, California: Sage.

Taylor, W.C., Blair, S.N., Cummings, S.S., Wun, C.C. and Malina, R.M. (1999). Childhood and adolescent physical activity patterns and adult physical activity. *Medical Science and Sports Exercise*, 31, 118-123.

Telamo, R., Nupponen, H. and Pieron, M. (2005). Physical activity among young people in the context of lifestyle. *European Physical Education Review*, 11(2), 115-135.

Tortolero, S.R., Taylor, W.C. and Murray, N.G. (2000). Physical activity, physical fitness and social, psychological and emotional health, in N.Armstrong and W. Van Machelen (eds) *Pediatric Exercise and Medicicne*, Oxford: Oxford University Press.

Trost, S., Pate, R., Saunders, D., Ward, M., Dowda, W. and Felton, G. (1997). A prospective study of the determinants of physical activity in rural fifth grade children. *Preventative Medicine*, 26, 257-263.

Trost, S.C., Pate, R.R. and Sallis, J.F. (2002). Age and gender differences in objectivity measured physical activity in youth. Medicine and Science in Sports and Exercise, 34, 350-355.

Trost, S.G., Pate, R.R., Ward, D.S., Saunders, R. and Riner, W. (1999). Correlates of objectively measured physical activity in preadolescent youth. *American Journal of Preventive Medicine*, 17(2), 120-126.

Trost, S.G. (2007). State of the art reviews: Measurement of physical activity in children and adolescents. *American Journal of Lifestyle Medicine*, 1, 299.

Trudeau, F. and Shephard, R.J. (2005). Contribution of school programmes to physical activity levels and attitudes in children and adults. *Sports Medicine*, 35(2), 89-105.

Tudor-Locke, C., Hatano, Y., Pangrazi, R. and Kang, M. (2008). Revisiting – How many steps are enough. *Medical Science and Sports Exercise*, 40, 537-543.

Tudor-Locke, C., Pangrazi, R., Corbin, C.B., Rutherford, W.J., Vincent, S.D., Raustorp, A., Tomson, L. and Cuddihy, T. (2004). BMI referenced standards for recommended pedometer-determined steps/day in children. *Preventive Medicine*, 38, 857-864.

Twisk, J.W.R. (2001). Physical activity guidelines for children and adolescents: A critical review. *Sports Medicine*, 31 (8), 617.

US Department of Health and Human Services (1996). *Physical activity and health: a report from the Surgeon General*, Atlanta, Georgia: National Centre for Chronic Disease Prevention and Health Promotion.

US Department of Health and Human Services (2008). *Physical Activity Guidelines for Americans*. Washington DC: US Department of Health and Human Services.

Usher, R. (1996). A critique of the neglected epistemological assumptions of educational research, in Scott, D. And Usher, R. (eds), Understanding educational research, London: Routledge.

Van Der Horst, K., Chin A. Paw, M.J., Twisk, J.W.R. And Van Mechelen, W. (2007). A brief review on correlates of physical activity and sedentariness in youth. *Medicine and Science in Sports and Exercise*, 39(8), 1241-1250.

Vanden Auwelle, Y., Bakker, F., Biddle, S., Durand, M., Seiler, R. (1999) *Psychology for Physical Educators*, Human Kinetics: USA.

Wallhead, T.L., Hagger, M. and Smith, D.T. (2010) Sport education and extracurricular sport participation: An examination using the trans-contextual model of motivation. *Research Quarterly for Exercise and Sport*, 18(4), 442-455.

Wang, C.K., Lim, B.S.C., Alpin, N.G., Chia, Y.M.H., McNeil, M. And Tan, W.K.C. (2008) Students' attitudes and perceived purposes of physical education in Singapore: Perspectives from a 2x2 achievement goal framework. *European Physical Education Review*, 14(1), 51-70.

Wang, C.K.J. and Biddle, S.J.H. (2001). Young peoples motivational profiles in physical activity: A cluster analysis. *Journal of Sport and Exercise Psychology*, 23, 1-22.

Wang, C.K.J. and Koh, T.H.M. (2006). Sport ability beliefs, self-determination and beliefs about the purposes of physical education among Singaporean potential preservice teachers. *Asian Journal of Exercise and Sports Science*, 3, 25-34.

Wankel, L. and Sefton, J. (1989). A season-long investigation of fun in youth sports. *Journal of sport and exercise psychology*, 11, 355-366.

Wankel, L.M. (1993). The importance of enjoyment to adherence and psychological benefits from physical activity. *International Journal of Sport Psychology*, 24, 151-169.

Warburton, V. and Spray, C. (2008) Motivation in physical education across the primary-secondary school transition. *European Physical Education Review*, 14(2), 157-178.

Ward, D.S., Saunders, R.P. and Pate, R.R. (2007). *Physical Activity Interventions in Children and Adolescents*, Human Kinetics: USA.

Weiss, M. (1996). Motivating kids in physical activity. President's Council on Physical Fitness and Sports Research Digest, 3(11), 1-7.

Weiss, M., Kimmel, L. and Smith, A. (2001). Determinants of sport commitment among junior tennis players: Enjoyment as a mediating variable. *Pediatric Exercise Science*, 13, 131-144.

Welk, G.J. (1999) The Youth Physical Activity Promotion Model: A conceptual bridge between theory and practice, *Quest*, 51 (1), 5-23.

Welk, G.J. (2002) *Physical Activity Assessments for Health Related Research*, Human Kinetics: USA.

Welk, G.J., Corbin, C.B. and Dale, D. (2000) Measurement issues for the assessment of physical activity in children. *Research Quarterly for Exercise and Sport*, 71, 59-73.

Welk, G.J., Differding, J.A., Thompson, R.W., Blair, S.N., Dziura, J. and Hart, P. (2000). The utility of the digi-walker step counter to assess daily physical activity patterns. *Medicine and Science in Sports and Exercise*, 32, S481-S488.

Wenthe, P.J., Janz, K.F. and Levy, S.M. (2009). Gender similarities and differences in factors associated with adolescent moderate-vigorous physical activity. *Pediatric Exercise Science*, 21, 291-304.

Welk, G.J. and Wood, K. (2000). Physical activity assessments in physical education: A practical review of instruments and their use in the curriculum. Journal of Physical Education, Recreation and Dance, 71(1), 30-40.

West, P. and Sweeting, H. (1997). Lost souls and rebels: a challenge to the assumption that low self-esteem and unhealthy lifestyles are related. *Health Education*, 5, 161-167.

West, P., Sweeting, H. and Leyland, A. (2004). School effects on pupils' health behaviours: evidence in support of the health promoting school. *Health Education*, 19(3), 261-291.

Whitehead, J.R. (1995). A study of children's physical self-perceptions using an adapted physical self-perception profile questionnaire. *Pediatric Exercise Science*, 7 (2): 132-151.

Whitehead, S. And Biddle, S. (2008). Adolescent girls' perceptions of physical activity - A focus group study. *European Physical Education Review*, 14(2), 243 - 262.

Williamson, A. (2005). Fundamental movement skills and habitual physical activity in young children. *Medicine and Science in sports and exercise*, 37, 4, 684-688.

Women's Sport and Fitness Foundation (2011). *Changing the game for girl's survey*. Institute of youth sport, Loughborough University, Institute of Youth Sport.

Woods, C., Meegan, S., Brady, P. and Belton, S. (2008). *Evaluation of the 'Be active, learn and have fun'*- A report prepared, School of Health and Human Performance, Dublin City University.

Woods, C., Nelson, N., O'Gorman, D. and Moyna, N. (2007). *The Take Part Study, Physical Activity for Teenagers*, A Report for the Midlands Area, School of Human Health and Performance, Dublin City University.

Woods, C.B., Nelson, N.M., O'Gorman, D.J., Foley, E. and Moyna, N.M. (2004). *The take part study (Physical activity research for teenagers). A report for the East Coast Area Health Board*, Centre for Sport Science and Health, Dublin City University.

Woods, C.B., Nelson, N.M., O'Gorman, D.J., Foley, E. and Moyna, N.M. (2009). The take part study (Physical activity research for teenagers): Rationale and methods. *Journal of Physical Activity and Health*, 6, 170-177.

Woods, C.B., Tannehill, D., Quinlan, A., Moyna, N. and Walsh, J. (2010). *The Children's Sport Participation and Physical Activity Study (CSPPA) Research Report No.1*. School of Health and Human Performance, Dublin City University and The Irish Sports Council, Dublin, Ireland.

World Health Organisation (2003). Health and development through physical activity and sport. Geneva, Switzerland: WHO Document Production Services.

World Health Organisation (2006). *Physical activity and health in Europe: Evidence for action*. Denmark, Regional offices for Europe, WHO Document Production Services.

World Health Organisation (2010). Global recommendations on physical activity for health. Geneva, Switzerland:WHO Document Production Services.

Appendices

Appendix A:

Oral Presentation

Belton, S.J.; Prior, P. (2010). Do we need extra-curricular physical activities in schools?

The research explores the impact of extra-curricular physical activity participation on self-esteem and physical activity enjoyment in Junior Cycle boys. The study also examines the reasons why students do or do not get involved in extra-curricular physical activity. In total, 174 Junior Cycle students (12-15yr old boys) from four City of Dublin Vocational Education Committee (CDVEC) schools took part in this research. The longitudinal study was carried out over the course of one school year and the data was collected at three separate time intervals. The students completed a questionnaire based around the 'Youth Physical Activity Promotion' model (Welk, 1999) and wore a pedometer for seven consecutive days. A sub-sample of students from each school also took part in focus group interviews at three separate time intervals throughout the same school year. Preliminary results show that students who regularly participate in extra-curricular physical activities have higher step count, higher levels of self-esteem and have a greater enjoyment of physical activity. Students who are not regularly participating in extra-curricular physical activities have lower step counts and lower levels of self-esteem. Interview data shows that those who regularly participate in extra-curricular physical activity highlighted enjoyment as their key motivator. Those who did not regularly participate indicated a variety of different reasons for their non-regular participation. The study highlights the value of participation in extra-curricular activities in Junior Cycle boys. The results are showing the positive impact on students that regularly participate in terms of raising their self-esteem and their enjoyment of physical activity. The analysis of results is still ongoing, but the researcher would like to share the current findings at this point with other PE teachers to highlight the positive impact that extra-curricular physical activity can have on our students.

Appendix B:

Poster Presentation

The relationship between participation in extra-curricular physical activity and the psychological wellbeing of adolescent males.

Catherine B. Woods, Paul Prior and Sarahjane Belton
School of Health and Human Performance at Dublin City University, Dublin, Ireland.

Introduction

Extra-curricular physical activity (ECPA) has an important role to play in providing minutes of physical activity to post-primary pupils (1). Children from disadvantaged backgrounds participate in less ECPA than children from non-disadvantaged backgrounds (2). The aim of this study was to examine the relationship between participation in extra-curricular physical activity and the psychological wellbeing of adolescent males.

Method

A longitudinal study, guided by the Youth Physical Activity Promotion model (YPAP) (4), was undertaken. Male, junior certificate pupils from four City of Dublin Vocational Education Committee schools (N=174, 12-15 years of age, mean age 13.59 + .91) completed self-report questionnaires on habitual physical activity (3) on the YPAP model (4), and they wore pedometers for eight days. A sub-sample of children who were either regular participants or non-participants in ECPA took part in focus groups. All measures were recorded at autumn, winter and spring of a single academic year. One way and repeated measures ANOVAs with post-hoc bonferroni comparisons and conservative p-values were applied.

Results

Over the academic year the average daily step count was 11,891 (SD 3,384), and the number of days per week that students reported achieving $\geq$ 60 minutes moderate-to-vigorous physical activity was 5.01 (SD $\pm$ 1.21). Regular participation (2+ times weekly) in ECPA was reported by 43%, while 41% reported 'sometimes' (once a week) and 16% reported 'never' participating in ECPA. The most popular ECPAs are listed on Figure 1.

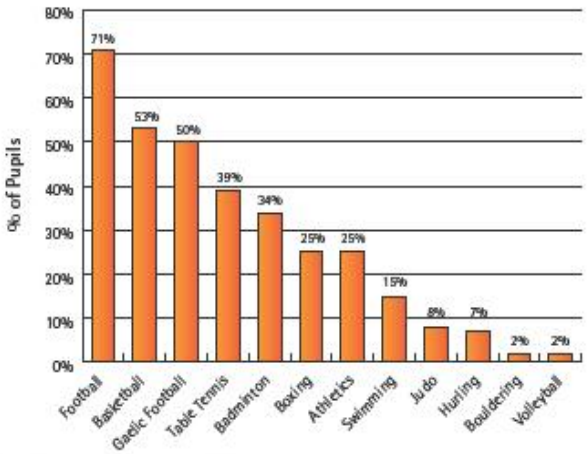


Figure 1.: Most popular extra-curricular physical activities

Perceptions of parental encouragement decreased among the participants over the academic year from autumn to summer (18.95 vs. 18.31; F=(154, 2) 4.420, p<0.01, greenhouse geisser). Children who never took part in ECPA scored significantly lower on year-long averages of all YPAP subscales (Table 1) than those who participated in ECPA sometimes or regularly. Participation, even infrequently, led to significant improvements in perceived competence, physical self worth, peer acceptance and perceived parental encouragement.

Table 1.: Year-Long Mean (SD) Scores for YPAP Subscales by ECPA Participation Categories

	ECPA category				
YPAP Sub-scales	Never (N=27)	Sometimes (N=70)	Regularly (N=73)	ANOVA	Post-hoc Tukey
PSW	14.94 (3.49)	19.19 (3.21)	21.08 (2.36)	F(2,167)=43.4, p<0.01	N<S, R; S<R.
PPC	14.88 (3.35)	20.30 (3.60)	23.49 (2.82)	F(2,167)=71.0, p<0.01	N<S, R; S<R.
LGS	13.33 (3.48)	17.48 (2.25)	18.51 (1.27)	F(2,167)=57.2, p<0.01	N<S, R; S<R.
LVE	11.79 (3.07)	15.50 (2.36)	16.81 (1.80)	F(2,167)=48.0, p<0.01	N<S, R; S<R.
FPE	11.46 (3.47)	15.18 (2.67)	16.49 (2.42)	F(2,167)=34.0, p<0.01	N<S, R; S<R.
PA	10.88 (2.85)	14.44 (2.89)	16.18 (2.32)	F(2,167)=40.0, p<0.01	N<S, R; S<R.
PE	15.26 (3.58)	18.53 (3.30)	19.76 (3.11)	F(2,167)=19.0, p<0.01	N<S, R; S<R.

*Note: PSW= Physical Self-Worth, PPC= Perceived Physical Competence, LGS= Liking of Games and Sports, LVE= Liking of Vigorous Exercise, FPE= Fun of Physical Exertion, PA= Peer Acceptance, PE= Parental Encouragement. R= Regularly, S= Sometimes, N= Never.

In the focus groups children who never took part in ECPA attributed their lack of participation to a perceived lack of competence, perceived lack of enjoyment, fear of bullying and a lack of parental support. However, these children believed that participation in ECPA had value. The talked about the health and social benefits gained by the boys who did participate in ECPA. They also spoke of the likelihood of participation in ECPA leading to an increase in attendance at school.

Conclusion

ECPA participation can have a positive effect on the psychological wellbeing of male, post-primary students. It may also have a role to play in keeping this difficult to reach group in school. This role should be acknowledged, with additional supports for ECPA within the school setting.

References

1) Silva, P., Sousa, M., Aires, L., Seabra, A., Ribeiro, J., Welk, G. J., & Mota, J. G. 2010, "Physical activity patterns in Portuguese adolescents: The contribution of extra-curricular sports", *European Physical Education Review*, vol. 16, no. 2, pp. 171-183.
2) Woods, C.B., D. Tannehill, A. Quinlan, N. Moyna, and J. Walsh. 2010. The Children's Sport Participation and Physical Activity Study (CSPPA). Research Report No. 1. Dublin, Ireland: The Irish Sports Council.
3) Prochaska, J.J., J.F. Sallis, and B. Long 2001. A Physical Activity Screening Measure for Use With Adolescents in Primary Care. *Archives of Pediatric Adolescent Medicine* 155, no.5:554.
4) Rowe, D., Raedeke, T.D., Warren, L.D., and Maher, M.T. (2007) Investigating the Youth Physical Activity Promotion Model: Internal structure and external validity evidence for a potential measurement model. Pediatric Exercise Science, 19, 420-435.

Appendix C:

School Recruitment Letter

Paul Prior
Plunket College
Swords Rd.,
Whitehall,
Dublin 9.

16/5/08

Dear Principal,

As part of a research project titled 'An investigation into the role of extra-curricular physical activities for male students in City of Dublin Vocational Education Committee (CDVEC) schools'.

My name is Paul Prior. I am a Physical Education Teacher at Plunket College in Whitehall. Currently, I am working on a research masters at DCU. The project is going to investigate the reasons why students in the Junior Cycle do or do not participate in extra-curricular physical activities. It will also look to highlight some of the possible, psychological benefits to students of taking part in these extra-curricular sporting activities. The project is only going to target Junior Cycle students (12 -15 yr olds) within the CDVEC. Data collection will begin in the first term of the 2008/2009 school year.

The project will ideally involve one class group of male students from first, second and third year. The students participating will be required to complete a questionnaire regarding their involvement in and attitude towards, extra-curricular physical activity and physical activity in general. They will be asked to wear a pedometer (step measuring device) for a period of 7 consecutive days. A sample of the students will also be asked to be involved in focus discussions regarding their extra-curricular physical activity participation. The completion of questionnaires, pedometer testing and focus groups will take place on three separate occasions throughout the school year. Friday mornings would be most suitable for data collection, but I can arrange with the physical education staff at the school appropriate days and times.

Please find enclosed information and consent forms for the students and their parents/guardians. Ideally, I would like to come into the school to speak to the class groups involved beforehand, just to explain to them what the research is about and what is involved and to give out the consent forms and information leaflets. Friday afternoons would be suitable, but I can arrange with the physical education staff at the school appropriate days and times.

Please do not hesitate to contact me if you have any queries regarding this project. Thank you for your time, I look forward to your response.

Yours sincerely,

Paul Prior.

Appendix D:

Plain Language Statement

Parent Consent Form

Child Consent Form

DUBLIN CITY UNIVERSITY
Plain Language Statement

Title: An investigation into the role of extra-curricular physical activities for male students in City of Dublin Vocational Education Committee schools (CDVEC)

Principal Investigator: Dr. Sarahjane Belton.
Contact: 01 7007393 or sarahjane.belton@dcu.ie

University Department: School of Health and Human Performance

Involvement in the Research Study

- The information gathered in this study will have an important role to play in helping us to understand why Junior Cycle boys do and do not participate in extra curricular physical activity.
- Participants will be required to complete a questionnaire regarding their involvement in, and attitude towards, extra-curricular physical activity and physical activity generally. They may be involved in focus group interviews regarding their extra-curricular physical activity. They will also be asked to wear a pedometer for a period of 7 consecutive days. A pedometer is a device, which measures the amount of steps taken over a period of time. The pedometers will be supplied by the research team. The completion of questionnaires and the pedometer testing will take place on three separate occasions throughout the school year.
- No one has to take part if they do not want to; participation is voluntary. You or your child may withdraw from the Research Study at any point. There will be no penalty for withdrawing before all stages of the Research Study have been completed. There will be no risk to participants from involvement in this study.
- Confidentiality is very important; participants' identity, or other personal information, will not be revealed or published. You will be given an ID number under which all personal information will be stored in a secure file at DCU. Only the researchers will have access to the information.

If you have concerns about this study and wish to contact an independent person,
Please contact:

The Secretary, Dublin City University, Research Ethics Committee,
c/o Office of the Vice-President for Research, Dublin City University, Dublin 9. Tel 01-7008000

DCU
Dublin City University

Parent Consent Form

Title: An investigation into the role of extra-curricular physical activities for male students in City of Dublin Vocational Education Committee schools (CDVEC)

School: School of Health and Human Performance

Principal Investigator: Dr. Sarahjane Belton contact email: sarahjane.belton@dcu.ie

- This study aims to identify reasons why male Junior Cycle students do or do not take part in extra-curricular physical activities and to highlight the psychological benefits to those who do
- This study also aims to identify the activity levels of these students and to identify inactivity and the reasons for it

Please complete the following (Circle Yes or No for each question)

Have you read or had read to you the Plain Language Statement?	Yes/No
Do you understand the information provided?	Yes/No
Do you understand what is required of your child as a participant?	Yes/No
Have you had an opportunity to ask questions and discuss this study?	Yes/No
Have you received satisfactory answers to all your questions?	Yes/No

I understand that if I allow my child to take part in this study:

- He will be completing questionnaires relating to his involvement in extra-curricular physical activity and physical activity outside of school. He will also need to wear a pedometer device for 7 consecutive days that will measure his levels of physical activity and may be involved in focus group interviews regarding extra-curricular participation. This will be done three times in this school year.

- He may withdraw from the Research Study at any point and there will be no penalty for withdrawing before all stages of the Research Study have been completed.

- Confidentiality is an important issue in this project. Participant's identity, or other personal information, will not be revealed or published. Subjects will be given an ID number under which all personal information will be stored in a secure file and saved in password protected file in a computer at DCU. Only the researchers will have access to the data.

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to allow my child to take part in this research project.

Parents Signature: ……..

Name in Block Capitals: ……..

Child's Name in Block Capitals: ……..

Witness: ……..

Date: ……..

DUBLIN CITY UNIVERSITY

Child Consent Form

Title: An investigation into the role of extra-curricular physical activities for male students in City of Dublin Vocational Education Committee schools (CDVEC)

Department: School of Health and Human Performance

Principal Researcher: Dr. Sarahjane Belton contact email: sarahjane.belton@dcu.ie

If I decide to take part in this research study I understand that:

- I will be completing questionnaires and taking part in interviews where I will answer questions about taking part in extra-curricular physical activity and physical activity outside of school. I will also need to wear a pedometer device for 7 consecutive days that will measure my levels of physical activity. This will be done three times during this school year.

- I know that I can stop taking part in the Research Study at any point and that there will be no consequence for stopping before all stages of the Research Study have been finished.

- I know that confidentiality is very important in this project. My identity, or other personal information, will not be given to anyone. I will be given an ID number and all my personal information will be stored in a secure password protected file in a computer at DCU. Only the researchers will be able to get this data.

- I have read and understood the information in this form. My questions have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project

Signature: _____

Witness: _____

Date: _____

Appendix E:

Physical Activity Questionnaire

Physical

Activity

Questionnaire

Student Details

Please **Print** all information in **Capitals**

1. Gender (please pick one): Male: □ Female: □

2. Age: .....

3. First Name: ..... Surname: .....

4. I.D Number ……..

5. What is the name of your school?
.....

6. What year are you in?
.....

7. Do you have a physical disability or learning disability, which affects your capacity to participate in certain physical activities?

Yes □ No □

Section 1: Physical Activity

Physical Activity is any body movement.

It can be done at different levels of effort:

- **Moderate Effort** makes your heart rate and breathing rate faster than normal. You may also sweat a little. Brisk walking and jogging are good examples.
- **Vigorous Effort** makes your heart rate much faster and you have to breathe deeper and faster than normal. You will probably sweat. Playing football or squash are good examples.
- Physical activity includes:
  Exercise Weight training, aerobics, jogging, dancing, etc.
  Sports Hurling, Football, Athletics, Swimming, etc.
  General Brisk walking e.g. to school, mowing the lawn, cycling to school, etc.

Please try to think carefully and be as accurate as possible with your answers. For these two next questions, add up all the time you spend in physical activity each day.
Remember: only include activities of either moderate or vigorous effort.

Q.1. Over the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? Please circle one number.

0 days 1 2 3 4 5 6 7 days

Q.2. Over a typical or usual week, on how many days are you physically active for a total of at least 60 minutes per day? Please circle one number.

0 days 1 2 3 4 5 6 7 days

Q.3. During the last 12 months, how many team or individual sports or activities did you participate in on a competitive level?

- ❑ None
- ❑ 1 activity
- ❑ 2 activities
- ❑ 3 activities
- ❑ 4 or more activities

What activities did you compete in?

Q.4. <u>Outside of school PE classes,</u> which of these have you done in the **<u>last 7 days?</u>**

There are no right or wrong answers. No one does all these activities. Please be as accurate and honest as possible.

For each activity listed, answer three questions:

1. Did you do this activity in the past 7 days? **Circle yes (Y) or no (N).**
2. **If yes,** on how many days did you do the activity in the past 7 days?
3. On average how many minutes did you do this activity on the days that you did it?

ACTIVITY			Number of days in last 7	**Minutes** per day
Sports and Dance	**NO**	**YES**		
1. Athletics	N	Y		
2. Basketball	N	Y		
3. Cricket	N	Y		
4. Dance	N	Y		
5. Gaelic Football	N	Y		
6. Golf	N	Y		
7. Gymnastics, Trampoline	N	Y		
8. Hockey	N	Y		
9. Hurling, Camogie	N	Y		
10. Martial arts: karate, judo	N	Y		
11. Racquet sports: badminton, tennis	N	Y		
12. Skating: ice, roller, skate boarding	N	Y		
13. Soccer	N	Y		
14. Softball, rounder's	N	Y		
15. Rugby	N	Y		
16. Volleyball	N	Y		
17. Water sports: sailing, rowing, canoeing	N	Y		
18. Boxing	N	Y		
19. Other (specify)	N	Y		

Exercise	**NO**	**YES**	Number of days in last 7	**Minutes** per day
20. Push-ups, sit-ups, jumping jacks	N	Y		
21. Jogging	N	Y		
22. Skipping	N	Y		
23. Swimming Laps	N	Y		
24. Walking for exercise	N	Y		
25. Other (specify)	N	Y		

General Physical Activities	**NO**	**YES**	Number of days in last 7	**Minutes** per day
26. Bicycling	N	Y		
27. Hiking	N	Y		
28. Walking to get places	N	Y		
29. Water play: in pool, lake, or ocean	N	Y		
30. Outdoor chores: mowing, raking, gardening	N	Y		
31. Indoor chores: mopping, vacuuming, sweeping	N	Y		
32. Other	N	Y		

Q.5. Looking back on all your answers, was the amount of physical activity you did in the last 7 days **typical** of the amount that you would **normally** do?

Please tick one box

Yes □ No, I usually do more □ No, I usually do less □

If no, why was this week unusual?

_____

Q.6. In the last 7 days, what did you do most of the time at school morning break? (Tick one only)

- ❑ Sat down (talking, reading, doing schoolwork)
- ❑ Stood around or walked around
- ❑ Ran or played a little bit
- ❑ Ran around or played quite a bit
- ❑ Ran and played hard most of the time

Q.7. In the last 7 days, what did you normally do at school lunchtime (besides eating lunch)?
(Tick one only)

- ❑ Sat down (talking, reading, doing schoolwork)
- ❑ Stood around or walked around
- ❑ Ran or played a little bit
- ❑ Ran around or played quite a bit
- ❑ Ran and played hard most of the time

Q.8. On the last weekend, how many times did you do sports, dance or play games? (Tick one only)

- ❑ None
- ❑ 1 time
- ❑ 2-3 times
- ❑ 4-5 times
- ❑ 6 or more times

Section 2: Extra-Curricular School Physical Activities

Extra-curricular physical activity is the provision of activities outside of the formal PE curriculum, most often after school and at lunch times, but also in some schools, at weekends and/or before school.

Q.9. Do you take part in extra-curricular physical activities at school? (Tick one only)

- ❑ Regularly
- ❑ Sometimes
- ❑ Rarely/Never

Q.10. What extra-curricular physical activities do you take part in at school? (Circle)

Gaelic Football Football Basketball Swimming

Badminton Table Tennis Bouldering Dance

Boxing Judo Volleyball Hurling Athletics

Others.....

Q.11. In the last 7 days, on how many days right after school, did you do sports, dance or play games? (Tick one only)

- ❑ None
- ❑ 1 time last week
- ❑ 2 or 3 times last week
- ❑ 4 times last week
- ❑ 5 times last week

Q.12. If you do not participate in extra-curricular physical activities, why do you not attend?

- ❑ I don't enjoy physical activity
- ❑ I'm too lazy
- ❑ I don't think I'm good enough
- ❑ Other ……

Section 3

Games and sports are any physical activity where you move your body for exercise or play. Examples of some games and sports are bicycling, badminton, dance, frisbee, rollerskating, swimming, gymnastics, skateboarding, climbing, and ball games such as basketball, gaelic football, hurling camogie, rugby and soccer. These are examples of only some games and sports – there are lots of others.

(listen for instructions before you write in this section)

Example Question:

Really true for me	Sort of true for me				Sort of true for me	Really true for me
☐	☐	Some students like football	**BUT**	Other students don't like football very much	☐	☐

(listen for instructions before you write in each item in this section)

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
1.	☐	☐	Some students are proud of themselves physically	**BUT**	Other students don't have much to be proud about physically	☐	☐
2.	☐	☐	Some students like playing outdoor games and sports	**BUT**	Other students don't like playing outdoor games and sports	☐	☐
3.	☐	☐	Some students get told by other students that they are not very good at games and sports	**BUT**	Other students are told that they are good at games and sports	☐	☐

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
4.	☐	☐	Some students do very well at all kinds of games and sports	**BUT**	Other students don't feel they are very good when it comes to games and sports	☐	☐
5.	☐	☐	Some students don't like getting sweaty when they exercise or play hard	**BUT**	Other students don't mind getting sweaty when they exercise or play hard.	☐	☐
6.	☐	☐	Some students have parents/guardians who encourage to play games and sports	**BUT**	Other students have parents/guardians who don't encourage them to play games and sports	☐	☐
7.	☐	☐	Some students don't like to exercise very much	**BUT**	Other students like to exercise a whole lot	☐	☐
8.	☐	☐	Some students are happy with how they are and what they can do physically	**BUT**	Other students are unhappy with how they are and what they can do physically	☐	☐
9.	☐	☐	Some students have more fun playing games and sports than anything else	**BUT**	Other students have more fun playing other things	☐	☐
10.	☐	☐	Some students get nervous or worried about playing games and sports	**BUT**	Other students don't get nervous or worried about playing games and sports	☐	☐
11.	☐	☐	Some students wish they could be a lot better at games and sports	**BUT**	Other students feel they are good enough at games and sports	☐	☐

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
12.	☐	☐	Some students don't like getting out of breath when they play hard	**BUT**	Other students don't mind getting out of breath when they play hard	☐	☐
13.	☐	☐	Some students have parents/guardians who play games and sports with them	**BUT**	Other students have parents/guardians who don't play games and sports with them	☐	☐
14.	☐	☐	Some students feel really tired after they exercise or play hard	**BUT**	Other students don't feel so tired after they exercise or play hard	☐	☐
15.	☐	☐	Some students don't feel very confident about themselves physically	**BUT**	Other students feel really confident about themselves physically	☐	☐
16.	☐	☐	Some students wish they didn't have to play games and sports	**BUT**	Other students wish they could play more games and sports	☐	☐
17.	☐	☐	Some students get teased by other students when they play games and sports	**BUT**	Other students don't get teased when they play games and sports	☐	☐
18.	☐	☐	Some students think they could do well at just about any new game or sport activity they haven't tried before	**BUT**	Other students are afraid they might not do well at games and sports they haven't ever tried before	☐	☐

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
19.	☐	☐	Some students like to burn a lot of energy by playing hard	**BUT**	Other students don't like to burn energy by playing hard	☐	☐
20.	☐	☐	Some students have parents/guardians who really help them to be good at games and sports	**BUT**	Other students have parents/guardians who don't help them very much at games and sports	☐	☐
21.	☐	☐	Some students don't enjoy exercise very much	**BUT**	Other students enjoy exercise a whole lot	☐	☐
22.	☐	☐	Some students have a positive feeling about themselves physically	**BUT**	Other students feel somewhat negative about themselves physically	☐	☐
23.	☐	☐	For some students, games and sports are their favourite thing	**BUT**	For other students, games and sports is not their favourite thing	☐	☐
24.	☐	☐	Some students don't make many friends when they play games and sports	**BUT**	Other students make a lot of friends when they play games and sports	☐	☐
25.	☐	☐	Some students feel they are better than others their age at games and sports	**BUT**	Other students don't feel that they can play as well as others their age at games and sports	☐	☐
26.	☐	☐	Some students feel bad when they run hard	**BUT**	Other students feel good when they run hard	☐	☐

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
27.	☐	☐	Some students have parents/guardians who tell them that they are good at games and sports	**BUT**	Other students have parents/guardians who tell them that they are not so good at games and sports	☐	☐
28.	☐	☐	Some students think that they will feel really good after they exercise or play hard	**BUT**	Other students think that they will feel bad after they exercise or play hard	☐	☐
29.	☐	☐	Some students wish they could feel better about themselves physically	**BUT**	Other students always seem to feel good about themselves physically	☐	☐
30.	☐	☐	Some students look forward to playing games and sports	**BUT**	Other don't look forward to playing games and sports	☐	☐
31.	☐	☐	Some students are popular with other students when they play games and sports	**BUT**	Other students are not very popular when they play games and sports	☐	☐
32.	☐	☐	In games and sports, some students usually watch instead of play	**BUT**	Other students usually play rather than watch	☐	☐
33.	☐	☐	Some students don't like to run very much	**BUT**	Other students do like to run a whole lot	☐	☐

	Really true for me	Sort of true for me				Sort of true for me	Really true for me
34.	☐	☐	Some students have parents/guardians who practice games and sports skills with them a lot	**BUT**	Other students have parents/guardians who hardly ever practice games and sports skills with them	☐	☐
35.	☐	☐	Some students really don't like to exercise	**BUT**	Other students do like to exercise	☐	☐
36.	☐	☐	Some students are very satisfied with themselves physically	**BUT**	Other students are often dissatisfied with themselves physically	☐	☐
37.	☐	☐	Some students don't do well at new outdoor games and sports	**BUT**	Other students are good at new games and sports right away	☐	☐
38.	☐	☐	Some students have parents/ guardians who give them equipment (balls, bats, gloves) to play games and sports	**BUT**	Other students have parents/guardians who don't give them sports equipment	☐	☐
39.	☐	☐	Some students are among the last to be chosen for games and sports	**BUT**	Other students are usually picked first	☐	☐

Appendix F:

Physical Activity Diary/Pedometer Recording

Student Physical Activity Diary
Pedometer Recording

Name ..... ID Number ..... School .....

Pedometer Step Count - Record the number each morning, once recorded, reset the pedometer to 0 by pressing the reset button)

Saturday Morning -	Sunday Morning -
Monday Morning -	Tuesday Morning -
Wednesday Morning -	Thursday Morning -
Friday Morning -	

Student Physical Activity Diary
Pedometer Recording

Days of the Week	Pedometer taken off	Why?
Friday		
Saturday		
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		

Appendix G:

Focus Groups
Raw Data/Themes and Sub-Themes

Regular ECPA participation Groups

RAW DATA	THEME	SUB-THEME
get more fresh air and get a social life ... Maybe have a bit of fun .. Everybody needs a bit of fun	SOCIAL ENJOYMENT	BE WITH FRIENDS TO HAVE FUN
yea, ya get on with more people, bond more	SOCIAL	BE WITH FRIENDS
cos i love sport and i love what i do .. Its important to me	ENJOYMENT	TO HAVE FUN LOVE OF SPORTS
i just .. Self-enjoyment and i like doing it and its deadly	ENJOYMENT	LOVE OF SPORTS
i enjoy it and it raises my self-esteem	ENJOYMENT PERCEIVED COMPETENCE	TO HAVE FUN IMPROVES SELF-ESTEEM
yea, cos if ya didnt like you'd be sitting in all day doing nothing	AVOID BOREDOM	SOMETHING TO DO
sports is deadly	ENJOYMENT	LOVE OF SPORTS
having a laugh with your mates	SOCIAL	BEING WITH FRIENDS
yea its whopper	ENJOYMENT	LOVE OF SPORTS
yea its good and ya improve like or get on a team	ENJOYMENT PERCEIVED COMPETENCE	TO HAVE FUN IMPROVE SKILLS MAKE THE TEAM
yea it can give ya a kinda lift	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM
yea keep yourself fit and healthy ... And to keep good at football or something if you were doing it ... To improve your ability and skill	PERCEIVED COMPETENCE	IMPROVE HEALTH AND SKILLS
take your mind off things, just have fun	ENJOYMENT	TO HAVE FUN
school can be so boring, sports can make it interesting	AVOID BOREDOM MOTIVATION FOR SCHOOL	MAKING SCHOOL INTERESTING
i love it !!!!	ENJOYMENT	LOVE OF SPORTS
i enjoy going and its a laugh	ENJOYMENT	TO HAVE FUN
being there with your mates is deadly cos ye have better crack	SOCIAL ENJOYMENT	BEING WITH FRIENDS TO HAVE FUN
i just like it, ya can stay fit and all	ENJOYMENT PERCEIVED COMPETENCE	TO HAVE FUN

		TO IMPROVE FITNESS
yea we do all sports .. Its deadly	**ENJOYMENT**	**TO HAVE FUN**
i just really love me sport	**ENJOYMENT**	**LOVE OF SPORTS**
to get better and feel good	**PERCEIVED COMPETENCE**	**IMPROVE SELF-ESTEEM**
yea fitter and have a laugh	**PERCEIVED COMPETENCE ENJOYMENT**	**TO IMPROVE FITNESS TO HAVE FUN**
its fun and to be with me mates	**ENJOYMENT SOCIAL**	**TO HAVE FUN BE WITH FRIENDS**

RAW DATA	THEME	SUB-THEME
it could build your confidence up, maybe give you courage	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM
it means that you're communicating with more fellas, making more friends, helps ya at talking and ya get associated with people better	SOCIAL	BEING WITH FRIENDS (MAKING FRIENDS) IMPROVES SELF-ESTEEM
ya feel over the moon if ya get into a final or do well in a competition like .. Or just getting picked for a team	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM MAKE THE TEAM
yea, you would be droopy all day and nothing to look forward too	AVOID BOREDOM	POSITIVE MOTIVATION
sometimes the only thing getting ya up out of bed is the thought of the sport .. and the tournaments	MOTIVATION TO ATTEND SCHOOL	POSITIVE MOTIVATION
it makes ya believe that you can do more	PERCEIVEC COMPETENCE	IMPROVES SELF-ESTEEM
sometimes it does and sometimes it doesn't cos if ur not really that good at sports people would be slagging ya and stuff (raising of self-esteem)	PERCEIVED COMPETENCE	SELF-ESTEEM (POSITIVE AND NEGATIVE EFFECT) MASTERY AND PERFORMANCE
well you do sports and then if ya get good you know that your good, it would build your confidence	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM
if ya win a medal it can shoot your confidence right up	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM (MEDALS)
yea, cos if ya do it ya get more confidence in yourself and ... Ya just get more confident when ya train	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM
if ya believe in yourself ya usually do well	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM
i tink it does cos your skills are improving and maybe your fitness so y feel better about yourself	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM IMPROVE SKILLS AND FITNESS
and getting on a team gives ya a great buzz like!	PERCEIVED COMPETENCE	MAKE THE TEAM
it makes ya feel your as good as everyone else	PERCEIVED COMPETENCE	IMROVES SELF-ESTEEM
yea when ya get picked it helps your confidence	PERCEIVED COMPETENCE	SELF-ESTEEM MAKE THE TEAM
yea ye feel better about yourself .. Know ye can do it	PERCEIVED COMPETENCE	IMPROVES SELF-ESTEEM

RAW DATA	THEME	SUB-THEME
there would be nothing to look forward to in a few weeks time or contests ... It gives ya the motivation to get your work done to get out to the football	MOTIVATION TO WORK HARDER IN SCHOOL	POSITIVE MOTIVATION FOR SCHOOL
cos it motivtes ya to do better ... Cos ya can't do the sports if your misbehaving in class ... Like, ya don't have to be smart, ya just have to do what you are asked, if ya do that, ya get to go out	MOTIVATION TO WORK HARDER IN SCHOOL (AND BEHAVE)	POSITIVE MOTIVATION FOR SCHOOL
u'd have no fun .. It would just be boring	ENJOYMENT AVOID BOREDOM	TO HAVE FUN MOTIVATION FOR SCHOOL
all u'd do would be come into school and do your work, you might not do it, then you'd get in trouble ... Got nothing to look forward to ... Nothing after school and all	AVOID BOREDOM	POSITIVE MOTIVATION FOR SCHOOL
yea, just be boring	AVOID BOREDOM	POSITIVE MOTIVATION FOR SCHOOL
yea, when ya people are not going in, like oh I'm staying off, but then, they say theres training on .. I have to go in	SOCIAL	POSITIVE MOTIVATION TO GO TO SCHOOL
i think it is important because when you look back on your school days ya can look back and say at least i played for a team like, that i just didnt do me work and get out .. I got involved	PERCEIVED COMPETENCE SOCIAL	SELF-ESTEEM BEING WITH FRIENDS
you would have loads of energy to burn and ya wouldn't be burning it ..	AVOID BOREDOM	POSITIVE MOTIVATION
cos like ya come into school and sport is one of the big things ya look forward ta	ENJOYMENT	POSITIVE MOTIVATION FOR SCHOOL

RAW DATA	THEME	SUB-THEME
they know you're not losing from it, better than hanging around on the streets or whatever	SOCIAL	PARENTAL APPROVAL
have fun, take part and like .. A load of stuff	ENJOYMENT	TO HAVE FUN
i get encouraged to go ... Me da and all, he gets me inta everything, gets me up when I'm at home, even when i don't wanna like	SOCIAL	PARENTAL ENCOURAGEMENT
they know that if your good at the sport, they will always encourage you to do it	SOCIAL	PARENTAL ENCOURAGEMENT
they encourage me all the time	SOCIAL	PARENTAL ENCOURAGEMENT
me Da goes to me matches and me Ma encourages me	SOCIAL	PARENTAL ENCOURAGEMENT (ATTENDS GAMES)
yea when i used to play for Ballymun Utd or Kevins, the little road leagues or when i was in goal for Ballymun Utd, me Ma and Da used to go	SOCIAL	PARENTAL ENCOURAGEMENT (ATTENDS GAMES)
me ma and da used to watch me before when i played for a team	SOCIAL	PARENTAL ENCOURAGEMENT (ATTENDS GAMES)
yea they encourage me and me Da sometimes comes to watch when I'm playing	SOCIAL	PARENTAL ENCOURAGEMENT (ATTENDS GAMES)
they like ta see ya having fun, enjoying yourself	SOCIAL	PARENTAL SUPPORT
they'd prefer ya doing that than other stuff	SOCIAL	PARENTAL APPROVAL
i dunno ... Like sitting around, watching telly ... Moping around the house i suppose	SOCIAL	PARENTAL APPROVAL
They like to see a smile on your face when ya enjoy something	SOCIAL	PARENTAL APPROVAL
some people just encourage ya to go because like ... Its fun and they probably think that you'll like it ... And maybe they won't have to go home on their own like...	SOCIAL	PEER ENCOURAGEMENT
yea my Da does tell me to go if you want to go ... That you will improve your skills and that you	SOCIAL	PARENTAL ENCOURAGEMENT PARENTAL APPROVAL

will get better		
they don't want ya to be lazy, getting bored and stuff ... They want ya to be healthy	**SOCIAL**	**PARENTAL ENCOURAGEMENT**
my Da loves to see me going to get better, he loves his sport	**SOCIAL**	**PARENTAL ENCOURAGEMENT**
yea, mine is the same, he often comes to watch me play	**SOCIAL**	**PARENTAL ENCOURAGEMENT (ATTENDS GAMES)**
they want ya doing something ya enjoy, so your not being lazy or sitting around	**SOCIAL**	**PARENTAL APPROVAL**

RAW DATA	**THEME**	**SUB-THEME**
it makes the teacher like ya better, like teachers who take part in the sports that you do would probably like ya more, they would get to know you better	**SOCIAL**	**IMPROVED RELATIONSHIP WITH TEACHERS**
its the best thing about school	**ENJOYMENT MOTIVATION FOR SCHOOL**	**POSITIVE MOTIVATION FOR SCHOOL**
it keeps ya going in class ... Thinking that later on like ya will be out on the field or doing table-tennis of whatever?	**MOTIVATION FOR SCHOOL**	**MOTIVATION TO WORK HARDER IN CLASS**
its what ya look forward to and you'd probably be more lazy without it	**MOTIVATION FOR SCHOOL**	**POSITIVE MOTIVATION FOR SCHOOL**
if ya don't play football or anything, its hard to get friends in the school	**SOCIAL**	**BEING WITH AND MAKING FRIENDS**
yea, you'd be sitting in school being lazy, getting the bus to school, doing nothing in school to keep ya fit	**AVOID BOREDOM PERCEIVED COMPETENCE**	**POSITIVE MOTIVATION** **IMPROVE FITNESS**
it makes school more enjoyable	**ENJOYMENT**	**POSITIVE MOTIVATION FOR SCHOOL**
it gives ya something to look forward to	**MOTIVATION FOR SCHOOL**	**POSITIVE MOTIVATION FOR SCHOOL**
yea, like if your in trouble and maybe ye had a bad day in school, ya can still look forward to after school stuff ... Thats if your let!!	**MOTIVATION FOR SCHOOL**	**POSITIVE MOTIVATION FOR SCHOOL**
yea, gets ya more friends and all	**SOCIAL**	**BEING WITH FRIENDS**
makes school more enjoyable	**ENJOYMENT**	**POSITIVE MOTIVATION**

		FOR SCHOOL
yea its the best thing about school	**ENJOYMENT**	**POSITIVE MOTIVATION FOR SCHOOL**
i think its important aswell, makes school more enjoyable like	**ENJOYMENT**	**POSITIVE MOTIVATION FOR SCHOOL**
some people might mess all the time aswell if there was none .. At least with extra-curricular ya have something to behave for	**MOTIVATION FOR SCHOOL**	**POSITIVE MOTIVATION TO BEHAVE IN SCHOOL**
if ya don't do your work ya can't get out there and do it	**MOTIVATION FOR SCHOOL**	**POSITIVE MOTIVATION TO WORK HARDER IN CLASS**

RAW DATA	THEME	SUB-THEME
When you are going to it and you make somebody mad, they could push you and all and you wouldn't really like that stuff.	PERCEIVED BULLYING	VERBAL AND PHYSICAL ABUSE
Same as everyone, sometimes I don't think I'm good enough in certain sports	PERCEIVED LACK OF COMPETENCE	NOT GOOD ENOUGH
People slagging me cause I'm not that good	PERCEIVED BULLYING	VERBAL ABUSE
im terrible at them (ECPA's)	PERCEIVED LACK OF COMPETECNE	NOT GOOD ENOUGH
yea i crack easily under peer pressure, so if im not good at the sport and i have the ball I'd probably just panic	PERCEIVED LACK OF COMPETENCE	NOT GOOD ENOUGH NERVOUS
but there are certain lads who do certain sports who completely ruin it for everyone else	PERCEIVED BULLYING	VERBAL ABUSE
yea messers and guys who when you want to try something will pressure you to give them the ball	PERCEIVED BULLYING	VERBAL ABUSE
yea like if you make a mistake they give out to ya	PERCEIVED BULLYING	VERBAL ABUSE
if you went to a certain sport and there were people there who were really good at it and really competitive and you were terrible, they might start picking on ya and slagging ya, maybe even for the rest of the year, but if you went and you found that you were good at it, then you would learn that you are good at something	PERCEIVED LACK OF COMPETENCE PERCEIVED BULLYING	NOT GOOD ENOUGH VERBAL ABUSE POSSIBILITY OF DOING WELL
ya dont think you're gonna be that good	PERCEIVED LACK OF COMPETENCE	NOT GOOD ENOUGH
yea like you could be good at the sport but when people are watching ya, ya might just trip over the ball ..	PERCEIVED LACK OF COMPETENCE	LOW SELF-ESTEEM/NERVOUS
i probably don't think I'm good enough or that i would make the team	PERCEIVED LACK OF COMPETENCE	NOT GOOD ENOUGH

RAW DATA	THEME	SUB-THEME
People who eh take part regularly can build up self-belief that they can do it.	VALUE OF ECPA PARTICIPATION	INCREASE SELF-ESTEEM
Its when people like when you are not god at the sport you just say I can't do this and you want to go but if people like help you do it that can help ya, bring up a greater side of ya and you probably would be good in a few weeks (definition from a student on self-esteem)	SELF-ESTEEM DEFINITION	SELF-ESTEEM DEFINITION
if i did it more and got better at it then yea, but if i just stayed the same as i was, it would probably lower it	VALUE OF ECPA PARTICIPATION	INCREASE SELF-ESTEEM
if they get complimented a lot it would raise their self-esteem	VALUE OF ECPA PARTICIPATION	INCREASE SELF-ESTEEM

RAW DATA	THEME	SUB-THEME
well if ya doss with people like i doss with ya get in trouble a lot ... So its get ya out of there and playing with a proper few mates	VALUE OF ECPA PARTICIPATION	BEING WITH FRIENDS
yea cos you would more than likely improve at that sport and then ya feel good about yourself	VALUE OF ECPA PARTICIPATION	IMPROVE SKILLS IMPROVE SELF-ESTEEM
ya can build confidence over the weeks if ya start to go regularly	VALUE OF ECPA PARTICIPATION	IMPROVE SELF-ESTEEM
enjoying it would help that	VALUE OF ECPA PARTICIPATION	ENJOYMENT
i think it would because you would be getting better at the sports. once you improve you build confidence	VALUE OF ECPA PARTICIPATION	IMPROVE SKILLS IMPROVE SELF-ESTEEM
if you scored a goal or something, that makes ya feel good about yourself	VALUE OF ECPA PARTICIPATION	IMPROVE SELF-ESTEEM

RAW DATA	THEME	SUB-THEME
if they give you belief then you will go and you can reach your goal	SOCIAL	PARENTAL SUPPORT
cos if my friends told me not to go then i would feel that i wasn't good enough	PERCEIVED LACK OF COMPETENCE SOCIAL	NOT GODD ENOUGH LACK OF PEER SUPPORT

it would make you feel that you were good at the sport .. It would give ya a bit of a confidence boost (if they did receive more encouragement to go)	**SOCIAL**	**NEED MORE ENCOURAGEMENT FROM PEERS/PARENTS**
yea, they want ta see ya enjoying yourself	**PARENTS WANT TO SEE THEM ENJOYING THEMSELVES**	**PARENTAL ENCOURAGEMENT**
yea my ma would want me out of the house, not lying around like	**PARENTS WANT THEM ACTIVE**	**PARENTAL ENCOURAGEMENT**
my ma wants me to join a football team to keep me off the streets	**PARENTS WANT THEM ACTIVE AND OFF THE STREET**	**PARENTAL ENCOURAGEMENT**
She tells me to always go cos she knows I'm good at sport	**GOOD ENCOURAGEMENT FROM PARENTS**	**PARENTAL ENCOURAGEMENT**
they don't want you to be lazy	**PARENTS WANT YOU ACTIVE**	**PARENTAL ENCOURAGEMENT**
they don't want ya sitting at home	**PARENTS WANT YOU ACTIVE**	**PARENTAL ENCOURAGEMENT**
don't want ta see ya on the streets	**PARENTS DON'T WANT YOU ON THE STREETS**	**PARENTAL ENCOURAGEMENT**
don't want ta see ya getting into trouble	**IN TROUBLE**	**PARENTAL ENCOURAGEMENT**
Yea, not to be lazy	**BEING LAZY**	**PARENTAL ENCOURAGEMENT**