

**Investigating Adolescent Physical Activity
Patterns including the Role played by Local
Authorities with a Case Study of Three Irish
Towns.**

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**Thesis submitted in fulfilment of the requirement
for a Masters of Arts - By Research**

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March 2010

I declare that work described in this thesis is my own and has not been submitted for any academic award at this or any other institute. All academic sources referred to within this thesis have been fully acknowledged and referenced.

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Abstract

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This study examined adolescent physical activity patterns; physical activities and location. Also included was the role played by local authorities in providing facilities and funding. The role of the family in encouraging adolescents to be physically active and whether adolescents are interested in physical activity participation were also included.

A mixed method approach was selected in which three towns of similar size and population were chosen. Interviews were conducted with local authority officials and questionnaires and activity diaries were distributed to adolescent participants within these towns.

Findings show that adolescent respondents expressed an interest to participate in physical activity. Participants also conveyed that they participate in an array of physical activities, in particular GAA. However, differences did occur, with boys appearing to be more physically active than girls. Other results show that active transportation, walking and cycling, were not popular as a means of transportation. Declining levels of physical activity were found as participants progressed in age and through education. Facilities and amenities are available for adolescents to engage in physical activity, in particular playing pitches which were the most popular location for physical activities. Local authorities although curtailed financially, do play a role in the provision of facilities but their role appears to be changing from direct provision to a facilitator of facilities.

The overall conclusion of this study is that adolescents are interested and do participate in physical activities. The role played by the GAA in this study was important; with GAA activities the most popular and playing pitches the most likely location. Local authority involvement in adolescent physical activity is important, providing some facilities, funding to local organisations and through zoning land for recreation.

Acknowledgements

- I would like to thank my tutor Sean Connor.
- To my tea mates Paddy and Lizzy, I know you will both shine in your chosen fields in the future. Thanks for everything. Also best wishes to everyone conducting research in WIT, especially those on the middle floor.
- I would like to take this opportunity to thank my friends who have supported me throughout this 'adventure', to name a few; Pat Minogue, Anne-Marie Hutchinson, Jimo, Seamie, Paul, Eugene, Richie, Jacqueline, Pat Murray, Ann-Marie Gavin, Brian, Joe, Joanne, everyone in Rec. Man., those in Thurles Golf Club and those I've worked with over the years. I have omitted some names but I will never forget your contribution and encouragement over the last 10 years. I would never have been able to get this far if it was not for your help.
- A special mention to those in Colaiste Eile in Thurles, where this quest for an education began; especially Peg Hanafin and Fiona Barry.
- Thanks also to all those who made this study possible – teachers, adolescent participants, their parents and local authority officials.
- A special thanks to my family. I am forever indebted to you all for standing by me and supporting me in my educational odyssey and for never questioning or doubting my decision to return to education. My sister Janet, brother Jimmie, sister-in-law Anne, my gorgeous niece and nephew Chloe and Jamie for their hugs and kisses. I would also like to acknowledge the contribution of my brother Gerry who helped me so much right from the start in 1999. I will forever follow in your intellectual shadow. To my mother Kathleen (Kitty), you are without doubt the most driven person I know and your resolve I inherited, without which I would never have been able to finish this project. I love you always.
- To Sharon. It has been some adventure. We met just after I started this project and you were there with me when it mattered most. I thank you for your support and your unwavering love. I love you; your smiles, your humorous insanity, madness and fun.

Oh Walt, this has been some adventure. Who would believe what has been achieved over the last ten years starting from that dark November day in 1997, when my future appeared so uncertain. Getting sick was in some way the making of me as a person because it allowed me to re-focus life and to look at past mistakes, in particular my greatest regret that of dropping out of school too young. I know in my heart that I have given this everything, in the process of attaining an education in what started with the Leaving Certificate; my greatest achievement in life and now finishing with a Master's degree ten years later. I just hope all the hard work will be worth it in the long run. No one will know of the difficulties faced, the commitment given or of the sacrifices made to get to this point. There have been lots of tough times doubting myself, even now when finishing. Along the way I met so many wonderful people who helped me so much. I also met my sporting hero again, my Dad, Jimmy. I fought hard for this; guess I've been fighting hard all my life; I always will.

This thesis is dedicated to me; a stupid kid who dropped out of school too young, before completing his Intermediate Certificate. Believe in dreams no matter how improbable or impossible they might seem. Life it seems brings an array of choices but, “I guess it comes down to a simple choice really. Get busy living or get busy dying” (King, 1982, p. 113).

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List of Abbreviations

Centers for Disease Control and Prevention	CDC
Central Statistics Office	CSO
County/City Development Boards	CDB
European Heart Health Initiative	EHHI
Gaelic Athletic Association.....	GAA
National Roads Authority	NRO
National Taskforce on Obesity.....	NTO
Spatial Planning Unit	SPU
Transit Cooperative Research Program	TCRP
Transportation Research Board.....	TRB
World Health Organisation	WHO

Chapter One - Introduction

1.1 Introduction

Being physically active may be considered a natural action, beginning during infancy with simple actions such as crawling. This and other skills can develop into more complex actions characterised in play, games and sports (Strong et al., 2005). However, Mulvihill et al. (2000) found that while young people were aware of the importance of physical activity, adolescent involvement in physical activity declines as one progresses from childhood (Gordon-Larsen et al., 2004). A consequence of this pattern of declining physical activity continuing into adulthood may result in these adolescents encountering health problems in adulthood (Centers for Disease Control and Prevention (CDC), 2006).

The location for physical activity (physical environment) may be an influencing factor in encouraging individuals to be active (Giles-Corti and Donovan, 2003a; Giles-Corti et al., 2005). Generally there are a number of locations suitable for individuals to engage in physical activity. These may include the workplace, parks, recreation/leisure centres, the home, travel, the journey to and from school, activities in school and neighbourhoods (Sallis et al., 1998; Brownson et al., 2001; Handy et al., 2002; Gauvin et al., 2005; Transportation Research Board (TRB), 2005; Ommundsen et al., 2006). However, during the past 40 years changes to the physical environment appear to have been associated with sedentary lifestyles (Sallis and Glanz, 2006). Schools (teachers, management policies and programmes) also play a role in facilitating physical activities due to length of time and numbers attending schools (Pate et al., 2005; Ball et al., 2006).

There are over one hundred local authorities in Ireland providing facilities such as swimming pools, parks, playgrounds and open space (Dooney and O'Toole, 1998; Callanan and Keogan, 2003; Oultwood, 2008). Recreation and amenity services fall under local authority control however; this area appears to have been overshadowed by other programmes which appear to have taken precedence (Roche, 1982; Callanan and Keogan, 2003). However, this does not mean local authorities do not facilitate recreation and amenity.

1.2 Statement of Topic

The research will investigate the physical activity patterns (activities and location) of adolescents and examine the role played by providers, in particular local authorities using a mixed method approach to gather data.

1.3 Aims and Objectives

The aim of this study was to examine the current physical activity patterns of adolescents during and after school hours. This study also aimed to ascertain whether adolescents are interested in participating in physical activity. Similarly the influence of the family is observed with regard to influencing adolescents to be physically active. A twin aim of this study was to examine the role played by local authorities in providing facilities, planning and funding suitable for physical activity.

1.4 Research Questions

There are four main research questions in this study which will seek to ascertain:

1. The level of interest of adolescents in physical activity;
2. How influential are sporting families in promoting physically active adolescents;
3. What are the physical activity patterns of adolescents;
4. What is the role played by local authorities with regard to provision of funding, planning and facilities in physical activity.

1.5 Proposed Solution

A mixed method approach using questionnaires, activity diaries and interviews will be used to elicit data, opinions and knowledge from adolescent participants in the towns of Dungarvan, Co. Waterford, Thurles, Co. Tipperary and Youghal, Co. Cork. The views of senior local authority officials from these three towns will also be sought.

1.6 Relevance of the Study

Adolescents are exposed to an array of activities, sedentary or active. In the past ten years this choice has been affected by an increased prevalence of computer games, tempting adolescents away from activities such as pucking a ball, cycling and running around. In the long term, this move away from an active lifestyle may be detrimental to health and may also impact the ability of adolescents to partake in more complex skills necessary for sports participation. To date much research has been conducted with regard to the physical activity patterns of both children and adolescents. However, the researcher felt there was an absence of research combining what (activities adolescents currently participate in), where (the location for physical activity) and the role of local authorities (provider).

1.7 Significance of the Study

The whole area of physical activity and sports participation may be deemed an important area for many reasons such as, reducing boredom, providing a social outlet, preventing illness and reducing weight and health problems which may start in adolescence and continue into adulthood. Although many organisations cater for adolescent interests, providing funding and programmes, are these sufficient for the current generation of adolescents? Over the past 10 years many changes appear to have occurred swaying adolescents away from a physically active lifestyle – abundance of choice and interest in computer games, unhealthy eating habits and lack of visible cycling patterns. With regard to issues of interest in this study, are adolescents interested in being physically active, what physical activities are they participating in, where are they going to be physically active and what is the role of local authorities with regard to provision?

This research allowed adolescents in Thurles, Dungarvan and Youghal to voice their opinions and interests in relation to physical activity, active transport and the location for physical activity. The research also looks at how local authorities contribute towards physical activity provision. The findings of this research may contribute towards a better understanding of adolescent sport and physical activity patterns and provide an insight into local authority involvement in adolescent issues.

1.8 Research Methodology

Adolescent participants were provided with questionnaires and activity diaries relating to their physical activity patterns and provision for physical activity in their area. Interviews were carried out with local authority officials in an effort to retrieve information on their approach to adolescent physical activity. In total four hundred and seventy six questionnaires and one hundred and five activity diaries were adequately completed for use, while three structured interviews were conducted with senior local authority officials.

1.9 Structure of Thesis

Chapter One – Introduction. This chapter will set the scene and give an introductory view of the whole study.

Chapter Two – Literature Review. This chapter reviews the literature in relation to:

1. Physical activity (categories/benefits/current trends/physical activity in school/barriers to physical activity/recommended levels of physical activity and active transportation);
2. The built environment (characteristics, locations for physical activity and public open space);
3. Local authorities (operations, finances, service indicators and development plans) and voluntary providers.

Chapter Three – Field Study. This section will briefly outline this study occurred and present geographic, populace and information regarding local authority employees, the schools surveyed and the facilities within these schools suitable for physical activity.

Chapter Four – Methodology. This chapter outlines the field research methods and instruments employed to gather qualitative and quantitative data.

Chapter Five – Presentation and Discussion of Findings. This chapter will present and discuss the findings from the research conducted. It will address the key research questions

of the study and highlight the physical activity patterns of adolescent participants and local authority provision with regard to physical activity and compares this information to the literature reviewed in chapter two.

Chapter Six – Conclusion and Recommendations.

Chapter Two - Literature Review

2.1 Introduction

Those aged between 12 and 19 years fall under many terms; teenagers, youth and adolescents and in turn this age group “are assigned a multitude of labels, most of them unfriendly” (Brendtro et al., 1998, p. 7). In general, the period of adolescence; with pubescent changes, represents a transitional period from childhood to adulthood which has been described as a time of active deconstruction, construction and reconstruction (Kaplan, 1984). In turn pubescent changes in conjunction with personal preferences may have the potential to influence interest in activity patterns (Raymore, 1995). Adolescence may be characterised as a period where major changes occur in the lifestyle trends of adolescents. Therefore, adolescence may be an important time for encouraging adolescents to be physically active to achieve optimal adult health (Gordon-Larsen et al., 2004). Being physically active may be considered a natural action beginning during infancy with simple actions such as crawling. This and other skills can develop into more complex actions such as walking, and more multifaceted skills characterised in sports (Strong et al., 2005).

However, Mulvihill et al. (2000) found that although young people were aware of the importance of physical activity to their future health status, adolescent involvement in physical activity declines as they progress from childhood (Gordon-Larsen et al., 2004). As a result adolescents may be more likely to engage in sedentary activities rather than physical activities, especially older adolescents (17 to 19 year olds) (Norman et al., 2005). A consequence of this pattern of declining physical activity, continuing into adulthood, may be that adolescents may encounter health problems as they get older (CDC, 2006). Census estimates for Ireland in 2002, showed that there were approximately 400,850 people aged between 12 and 19 years in Ireland, equaling 12 per cent of the total population (Central Statistics Office (CSO), 2004; Department of Health and Children, 2007).

A report compiled in Ireland found that young people were interested in leisure and recreational activities, providing adequate facilities existed to assist their participation and interest (Department of Health and Children, 2000). The location for physical activity

(physical environment) may be an influencing factor in encouraging people to be active; with access to public open spaces, footpaths or routes to walk cited as reasons for people, both young and old to be active (Giles-Corti and Donovan, 2003a; Giles-Corti et al., 2005). Generally there may be a number of locations which may be considered conducive for people to engage in physical activity. These may include the workplace, parks, recreation/leisure centres and neighbourhoods (Sallis et al., 1998; Brownson et al., 2001; Gauvin et al., 2005). Other locations can include the home, travel, the journey to and from school, activities while in school and leisure pursuits (Handy et al., 2002; TRB, 2005; Ommundsen et al., 2006). However, over the past 40 years changes to the physical environment appears to have been associated with sedentary lifestyles patterns, as people may not have the location to engage in physical activities (Sallis and Glanz, 2006). Schools (teachers, management policies and programmes) also play an important role in facilitating physical activities. Due to length of time and numbers attending schools, the school environment can play an important role in providing physical activity (Pate et al., 2005; Ball et al., 2006). Currently there are approximately 3,300 primary schools and 740 secondary schools serving an estimated 784,000 children and adolescents in Ireland (Department of Education and Science, 2004).

There are over one hundred local authorities in Ireland who provide facilities such as swimming pools, parks, playgrounds and open space (Dooney and O'Toole, 1998; Callanan and Keogan, 2003; Oultwood, 2008). While recreation and amenity services fall within the control of local authorities, this area appears to have been overshadowed by other programmes – housing, road construction, water and sewerage, which have taken priority, claiming most of the limited resources available to local authorities (Roche, 1982; Callanan and Keogan, 2003). However, this does not mean local authorities do not facilitate recreation and amenity. In 2007, local authority expenditure totaled over €404 million towards recreation and amenity for swimming pool projects, parks, open space and recreation centres (Department of the Environment, Heritage and Local Government, 2007a). Funding is also available from the National Lottery for sport and amenity under the Sports Capital Programme, which allocated a total of over €50 million in 2008 (Department of Arts, Sports and Tourism, 2008).

Adolescence may be described as a turbulent time for a growing child with major physical, social and psychological changes occurring during this time. At this stage in life, a child would be expected to have developed various natural skills such as balance, coordination and a running ability, which may aid their involvement in more complex activities needed for sports participation. However, despite studies highlighting adolescent interest in physical activity, adolescent involvement in physical activities declines during adolescence. At present there are approximately four hundred thousand adolescents in Ireland and as a consequence of withdrawing from physical activity during adolescence, some of these Irish adolescents may be susceptible to various health problems in adulthood. The availability of an area suitable for adolescent physical activity may be an important influencing factor supporting adolescents to become physically active. Over one hundred local authorities exist within Ireland providing various services, including recreation and amenity. However, the role played by local authorities in providing for physical activity may not be totally clear with other services appearing to hold more priority with regard to funding and provision.

The literature under review will firstly look at definitions and categories of physical activity. Following this, the benefits of physical activity will be discussed. Current trends with regard to physical activity will follow to highlight present inclinations of adolescents. Other areas/topics discussed include the role played by schools in physical activity provision, barriers to adolescent participation in physical activity, recommended levels of physical activity and concluding with active transport to and from school. Following on from this, the second section will highlight the location for physical activity – the built or physical environment. This section will again begin with a definition of the built environment and its characteristics. An examination into the locations for physical activities and community design will take place and will conclude with public open space. The final section will look at functions, finances and development plans of local authorities. Voluntary providers will conclude the literature review.

2.2 Definition of Physical Activity

Physical activity, exercise and physical fitness are generally used interchangeably, however they can have different meanings in that physical activity may have broader structures (Molnár and Livingstone, 2000; National Taskforce on Obesity (NTO), 2005). Goran et al. (1999) and Cale and Harris (2005) suggest that physical activity is multi-dimensional in nature and is the result of bodily movement produced by the contraction of skeletal muscles which increases energy expenditure above the basal level (Sheppard, 2003; TRB, 2005). The underlying thought being, that the larger the muscle movement, the larger the energy expenditure (Vanhees et al., 2005). “This relatively well understood biomechanical or biochemical process leads to a complex set of responses” that have a variety of health and performance related dimensions (Haskell and Kiernan, 2000, p. 541). Physical activity can be categorised using various terms mainly mode, intensity and purpose while dimensions such as frequency and duration can also be included (NTO, 2005; Cale and Harris, 2005).

Goran et al. (1999) add that physical activity can comprise of activities such as play, games, household chores or sport. Physical activity can also be further categorised into additional classes:

1. Physical activity for leisure/sport;
2. Physical activity for transportation;
3. Physical activity in and around the home (gardening and housework);
4. Occupation related physical activity.

(Giles-Corti and Donovan 2002; World Health Organisation (WHO) (2003); TRB (2005).

In relation to occupation based physical activity, whereas once the workplace and household chores may have been deemed a major source of physical activity, now this trend has diminished in developed countries and may be considered a forgotten source of physical activity (Sheppard, 2003).

Generally physical activity, exercise and physical fitness appear to have similar characteristics with an end result of energy expenditure as a consequence of bodily movement of the skeletal muscles. Physical activity can occur in various forms – in sport, for transportational purposes, activities in or around the home and while working.

Categories such as mode, type, intensity and purpose may also have common characteristics with other forms of bodily movement – sport, exercise and physical fitness but physical activity may be more complex with further categories within its definition. These categories will be highlighted now.

2.2.1 Categories of Physical Activity

Physical activity can involve many pursuits including sport, drama, dance, work, aerobics, skateboarding and rollerblading (Department of Health and Children, 2007) some of which may not be readily associated with physical activity. Giles-Corti and Donovan (2003a) categorised physical activity as light to moderate activity (gardening, household chores), vigorous activity (vigorous swimming, jogging, and aerobics) and walking for transportation or recreation. The defining characteristic between vigorous and moderate activity may be the time difference and level of exertion involved in the activity resulting in increasing the level of intensity (Arriaza Jones et al., 1998). For example, the faster an individual walks, the higher the intensity level which in turn will reduce the time taken to cover the desired distance. However, it must also be stated that physical activity does not need to be strenuous to be beneficial for the greater population (Lumsdon and Mitchell, 1999). Williams (1996) in turn divided physical activity into groupings of structured and/or unstructured activities, with walking, cycling, climbing stairs, gardening, physical and domestic work, games and childhood pursuits being categorised as unstructured. For example, people preferring to engage in activities on their own therefore may be more likely to engage in unstructured activities (Sallis et al., 1998). In contrast, structured physical activities may have a more physical fitness and exercise connotation. Fox and Riddock (2000); Molnár and Livingstone (2000) and Sheppard (2003) refer to sport and exercise as being subsets/sub-categories of physical activity, citing structured connotations while also suggesting that physical activity serves as an indicator of capacities such as cardiovascular endurance, muscular strength and mobility.

Although exercise and physical activity are generally used interchangeably to represent movement produced by contraction of skeletal muscles, exercise may be better defined as a

subcategory of physical activity being planned, structured and repetitive (Haskell and Kiernan, 2000). This may serve a purpose of improving or maintaining one or more of the components of physical fitness. Goran et al. (1999) and TRB (2005) pointed out that physical fitness shares some of the attributes of physical activity in terms of balance, power, agility, flexibility, strength, speed and coordination. These factors also relate to one's ability to "perform daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits" (Haskell and Kiernan, 2000, p. 542). Generally, physical fitness may be considered to be a product of cardiovascular endurance (Goran et al., 1999) and may be a good marker of physical activity in children (Molnár and Livingstone, 2000). By developing an active lifestyle early in childhood and continuing this pattern into adolescence, it may predict activity levels in adulthood (Epstein et al., 2001). The perceived difference between structured activities such as sport and exercise, and unstructured activities such as physical activity, may be that structured activities are planned regularly as a means to retain, improve or develop fitness, strength or health (Molnár and Livingstone, 2000). Unstructured activity may include informal activity and result in minor body movement in an intermittent nature. Activities such as walking, cycling, skating, skateboarding, scooters and wheelchair use may also be considered forms of physical activity (TRB, 2005).

As stated previously, physical activity can be defined in many ways but can be narrowed to light (walking), moderate (gardening and household) and vigorous (swimming, jogging and aerobics) and include sporting pursuits, dance and drama. However, what denotes one of these categories from another is the level of exertion involved in the pursuit but all three categories can be beneficial to the general public nonetheless. Physical activity can however be further categorised into structured physical activity which is planned in advance for a purpose, and/or unstructured physical activity which is not planned and not participated in for a particular purpose. Unstructured physical activities may also be referred to as casual physical activities. While unstructured physical activity appears to have a non-competitive connection, structured physical activity appears to have a competitive link. The combining factor between structured and unstructured physical activity may be that they can act as indicators of cardiovascular endurance and muscular

strength. Ultimately, physical activity, exercise and physical fitness can share elements and categories such as bodily movement as a consequence of skeletal muscle activation and can improve and/or maintain physical fitness and health of individuals. However, physical activity may be distinct due perhaps to the fact that physical activity may be participated in without a purpose and in an array of settings – in sport, in leisure, in transportation, in the home and/or while working. While exercise and physical fitness appear to be participated in for a purpose – to become physically fit. At this point it may be necessary to explore the benefits of physical activity.

2.3 Benefits of Physical Activity

Shaughnessy (2003) and Garcia Bengoechea et al. (2005) referred to regular patterns of physical activity as having physical, psychological and social benefits. Health benefits and disease prevention may also act as an incentive mechanism for people to become and remain active throughout life (Department of Health and Children, 2007). Regular aerobic physical activity can increase exercise capacity and fitness which can lead to numerous protective health benefits (Boreham and Riddoch, 2001; Vanhees et al., 2005; Nelson and Gordon-Larsen, 2006). Developmentally, physical activity may be critical to the normal growth and development of children (Pate et al., 2000). However, whereas physical fitness refers to physiological states that can allow one to meet the demands of daily living and/or provide the basis of sports performance, physical activity may have more health benefits and share components of physical fitness; cardiovascular fitness, musculoskeletal fitness, body composition and control of metabolism (Warburton et al., 2006). Regular physical activity can reduce the risk of diabetes, colon cancer, and hypertension while physical inactivity is an independent risk factor of heart disease similar in status to smoking, hypertension and hypercholesterolemia (blood clotting) (Glasgow et al., 2001).

Other benefits of physical activity include disease prevention, reduce blood pressure, prevent obesity and weight gains, promote strong and healthy bone, muscle and joint structures, promote a healthy heart and good mental health (European Heart Health Initiative (EHHI), 2001; Boreham and Riddoch, 2001; Glasgow et al., 2001; Wing et al.,

2001; NTO, 2005). Westerstahl et al. (2005) found that activities such as walking and cycling to school offer important health benefits which can be incorporated into everyday life and help to sustain a physically active lifestyle. The establishment of early practices of healthy living by being physically active should be continued into adulthood thus helping to reduce future chronic health problems such as heart disease, diabetes and certain cancers (Glasgow et al., 2001; Wing et al., 2001). Physical activity may also help to reduce the feeling of depression and anxiety while promoting psychological well-being (Glasgow et al., 2001; CDC, 2006).

High levels of fitness and physical activity may act as a protective measure for people, and people who become physically active may reduced their risk of illnesses such as heart disease, when compared with those with low levels of fitness and physical activity (Dubbert, 2002). Continuous evaluation of physical activity may have substantial benefits to the individual but also requires constant maintenance for the duration of an individual's life (Glasgow et al., 2001). Some of the benefits of physical activity as viewed by adolescents were involvement in less structured casual activities, the enjoyment factor from social interaction with friends and being involved in team sports (Mulvihill et al., 2000; O'Sullivan Ryan, 2005). Incidents of crime in adolescent neighborhoods were also associated with low levels of physical activity (Gordon-Larsen et al., 2004). Factors influencing adolescent participation in physical activity may include; improving wellbeing, a social outlet to enjoy, prevent boredom, control weight, exercise to maintain good physical condition (Mulvihill et al., 2000; Westerstahl et al., 2005; Shannon, 2006). These influencing factors may also work in conjunction with whether the benefits outweigh the perceived barriers such as cost, time constraints and work (Westerstahl et al., 2005). Therefore, physical activity may need to be included as part of normal, everyday activities for young people through play, games, transport, sport, walking, cycling and physical exercise while in school (EHHI, 2001).

Physical activity can have physiological, psychological and social benefits and may help to encourage high physical activity levels throughout life. The physiological benefits can vary from being a protective measure against disease and illness to aiding body composition and

controlling metabolism. Benefits may also include promoting healthy bone, muscle and joint structures from simple activities such as walking and cycling. These activities can be incorporated into everyday living with ease and also act as a mode of transportation. Psychological benefits can include reducing the risk of depression and anxiety and aiding mental health. Physical activity may also have social benefits such as aiding socialising skills by allowing people to meet other similarly minded people in a casual, less competitive manner and relieving boredom. Physical activity may be critical to normal child development. However, although the benefits may outweigh the barriers; cost and time, physical activity may need to be continually evaluated throughout life as one may lose the desire to be active and thus be susceptible to illnesses as a result of inactivity. The next section will examine current trends with regard to physical activity.

2.4 Current Trends in Physical Activity

Epstein et al. (2001) found that adolescents engage in varying amounts of physical activity during the day. However, declining levels of physical activity began to be noted in the early 1990s. At this time British children were found to have low levels of habitual physical activity which appeared to be in decline (Armstrong et al., 1990). This trend of declining levels of physical activity noted in 1990 appears to have continued to the present, with declining participation in sports and physical activity seen as a natural and expected occurrence as children move towards adolescence (Trost et al., 2003; de Róiste and Dinneen, 2005; Department of Health and Children, 2007). Moore et al. (2003) noted the prevalence of physical inactivity and obesity in children and how these factors continued into adulthood. This pattern of physical inactivity appears to have occurred in a relatively short period of time in many countries around the world (Buchner and Miles, 2002; NTO, 2005). Similarly Gordon-Larsen et al. (2004) stated that the majority of adolescents in the United States do not achieve the recommended levels of physical activity per week. A report published by TRB (2005) found that 30 per cent of adolescents did not meet recommended physical activity guidelines with 10 per cent reported to be physically inactive.

A study examining urban and rural physical activity amongst children found that rural children had higher levels of physical activity than urban children (Joens-Matre et al., 2008). In a US study of children aged between 10 and 17 years, it was found that fewer rural children achieved physical activity recommendations when compared to urban children but the frequency levels of both groups to participate in physical activity were low overall (Liu et al., 2007). A Cypriot study examining urban and rural physical activity levels amongst children showed seasonal differences between the groups, with urban children more physically active during winter and rural children more active during summer (Loucaides et al., 2004). However, urban and rural physical activity patterns of children did not appear to agree with patterns in adolescence. An Icelandic study found rural adolescents to be more sedentary and less physically active than urban adolescents (Kristjansdottir and Vilhjalmsjon, 2001). While both urban and rural adolescents in Norway were found to spend more time participating in sedentary activities such as watching television and playing electronic games, than on physical activity (Sjolie and Thuen, 2002). Young people in rural areas can be at a disadvantage when compared to urban counterparts because of difficulties accessing facilities, funding and programmes but the presence of a strong organisation such as the GAA (Department of Health and Children, 2007) in Irish terms, can offer rural adolescents with an opportunity to be physically active.

Physical activity may also be an important factor in preventing chronic disease with the World Health Organisation reporting 1.9 million deaths annually as a result of physical inactivity (WHO, 2003). Another study concurred with this World Health Organisation finding when it was found that approximately two-thirds of industrialised countries were not meeting minimum physical activity guidelines (Garcia Bengoechea et al., 2005). Gordon-Larsen et al. (2004) also reported low levels of physical activity and a high tendency of inactivity amongst adolescents in the United States. Accordingly, Taveras et al. (2007) found that early adolescence (13 to 15 years) is the time period characterised by a severe drop in physical activity in favour of a sedentary lifestyle and the development of an unhealthy dietary intake which can increase the risk of obesity. Although physical activity can have many benefits, declining levels of physical activity in favour of sedentary activities appears to be prevalent in countries around the world (NTO, 2005). This pattern

of sedentary behaviour may be likely to continue in technologically developed western countries in the future (Norman et al., 2005).

Physical inactivity in childhood can develop through the life stages and influence obesity and cardiovascular disorders in later life (Hussey et al., 2001). Hussey et al. (2001) further showed that 20 per cent of girls and 14 per cent of boys from Dublin exercise less than the recommended weekly levels in favour of sedentary activities. The Department of Health and Children (2006) published a report highlighting gender differences between boys and girls with 63 per cent of boys and 43 per cent of girls exercising four or more times a week. These results are similar to a previous study conducted by the Department of Health and Children years earlier. Similarly one-third of adolescents in the United States engage in insignificant levels of physical activity relative to recommended levels (TRB, 2005). However, in a study investigating international adolescent nutritional trends, it was found that participation in sports activities amongst Irish adolescents was high, particularly amongst boys, when compared to other countries (Schneider, 2000).

Ommundsen et al. (2006) found that younger children may be more likely to be active through playing simple games than older children who may view this type of activity as being too child orientated. High levels of continuous physical activity between the ages of 9 to 18 can significantly predict a high level of adult physical activity (Telama et al., 2005). A Canadian study found 'incontrovertible' evidence to suggest that regular physical activity contributes to the primary and secondary prevention of several chronic illnesses (cardiovascular disease, diabetes, cancer, hypertension, obesity, depression, and osteoporosis) and reduces the risk of premature death (Warburton et al., 2006). Similarly, Fox and Riddock (2000) emphasised the need for regular physical activity and suggested that sedentary living doubles the risk of death from cardiovascular disease and may contribute to increasing the risk of diabetes, osteoporosis, obesity and some cancers. Other outcomes of physical inactivity may include high blood pressure, high cholesterol, asthma, arthritis and generally a poor health status (CDC, 2006).

The working environment may also offer an opportunity for individuals to engage in physical activity. However, technological advances – escalators, elevators, air assisted tools and other electronic equipment may have reduced energy expenditure during working hours (Giles-Corti et al., 2003b). Declines in activities such as walking and cycling have also been found as a result of labour-saving alternatives such as cars, escalators, elevators and remote controls (Ziviani et al., 2004). Decreases in work and active transport-related physical activity have occurred in conjunction with a shift away from manual labour - farming, carpentry and factory jobs, in favour of service and technology related employment which offers little energy expenditure (Sallis et al., 1998; French et al., 2001). Various studies have anticipated that between 20 per cent and 39 per cent of adolescents are currently employed in either part-time or full-time employment (Valois et al., 1999; Santana et al. 2005). However, precise estimates of adolescents currently in employment may be difficult to establish. Connor (2003) found that one-third of Irish adolescents are employed in part-time occupation. Therefore, work related physical activity/inactivity may also affect approximately one hundred thousand Irish adolescents.

Wagner et al. (2004) attributed parental involvement in sport/physical activity with their child's participation in physical activity, particularly in structured physical activities outside school hours. This view of parental participation in physical activity influencing their child's participation in physical activity was also supported by (Troost et al., 2003). Children with a parent actively involved in either participating or volunteering in sport/physical activity were more likely to engage in regular sports (Kremarik, 2000). However, other studies have found that although parental participation in physical activity can be positively associated with their child's participation in physical activity, the link may not be as strong as one might think (Sallis et al., 2000). Sallis et al. (2000) also found that there may other agents who may act as supports to adolescent physical activity; significant others and siblings. Typically social supports for adolescent participation in physical activity may include parents, siblings, extended family members such as cousins, aunts/uncles and grandparents and friends (Hohepa, 2008). Parental support was found to be important in encouraging adolescents to participate in physical activity (Troost et al., 2003). In a reverse trend, it was also found that a child's physical activity pattern can also

influence their parents' involvement in physical activity (Dishman, 1994). Ferreira et al. (2006) found that one of the most consistent positive influences of adolescent physical activity was the father's physical activity. Other positive supports included significant others and the mother. As to how parents influence and/or support their child's physical activity practices may be somewhat unclear however, mothers were identified as providing logistical support (driving child to activities) while fathers provide greater levels of role modelling (Hohepa, 2008). Role modelling refers to the "association between physical activity levels of a support source (parent, mother, sister) and the adolescent or child" (Hohepa, 2008, p. 116).

Westerstahl et al. (2005) found that more than 70 per cent of adolescents surveyed failed to achieve the recommended levels of physical activity per day and also showed that girls appear to choose physical activities of a lower intensity than those of boys. Nelson et al. (2006) similarly noted substantial decreases in physical activity and increases in sedentary activities particularly amongst girls, while boys showed a delayed decline in physical activity highlighting a decline in physical activity during mid to late adolescence. However, in terms of inactivity, boys were found to be more likely than girls to engage in computer activities, while girls were more likely to listen to music or talk with friends (Norman et al., 2005). Although it was found that girls and boys spent equal amounts of time participating in physical activity, the intensity levels of girls were found to be considerably lower than those of boys (Pate et al., 2005; Westerstahl et al. 2005). Many studies note declining levels of physical activity amongst adolescents including Irish studies. Where it was found that by the time Irish children reach adolescence, less than half will take part in regular physical activity (O'Sullivan Ryan, 2005). In addition to this is a trend for girls to lose interest in physical activity at an earlier age than boys (Nelson et al., 2006).

Involvement in sports clubs can also allow adolescents an opportunity to be physically active. Vilhjalmsson and Kristjansdottir (2003) expressed the belief that organised sports clubs need to recruit children and adolescents into sport and as a consequence reduce gender disparities that may exist between the participation levels of boys and girls. Sports

clubs can offer guidance, cater for large numbers and offer facilities not accessed easily elsewhere. Sports club membership can be diverse, with many opportunities to join numerous different sports clubs (Kirk and MacPhail, 2003). Participation in sports and being involved in a club setting can have many personal and societal benefits. But they can be portrayed as a “double-edge sword in that negative consequences may result if programmes are not well run” (Seefeldt and Ewing, 1997, p. 14). For example, clubs require educated coaches who pay consideration to guidelines set by governing bodies. Sports clubs in turn need to emphasise the potential of the sport and the benefits of lifetime involvement for individuals as involvement in sports clubs may offset unsocial behaviour and future health problems amongst the adolescent populace (Seefeldt and Ewing, 1997). However, there currently appears to be a tendency for adolescent boys to be members of sports clubs – soccer, swimming, tennis, cricket, rugby and basketball, while girls tended to favour dance classes - disco, modern dance and ballet (Mulvihill et al., 2000).

This was also observed in a study of children’s physical activity levels in Ireland, where it was found that more boys participate in team sports such as GAA, soccer and rugby, than girls, who participated in non-contact sports such as basketball, gymnastics, dancing and tennis (Shaughnessy, 2003). The popularity of dance in particular for girls was also noted in other studies (Passmore and French, 2001; Dowda et al., 2004; Department of Health and Children, 2007). In general girls appear to favour less competitive sports/physical activities than boys. Physical activity has been reported to be in decline with adolescents during the last few years with inactivity more prevalent in girls (WHO, 2003). This trend was supported by Aarnio et al. (2002) who showed that boys were more likely to be physically active than girls. Fox and Riddock (2000) also pointed to the likelihood of boys being more likely to engage in sports with girls more likely to walk and do household chores. This pattern of physical inactivity appears to be a growing health problem and may be as important to the risk of disease as smoking and poor diet (Giles-Corti & Donovan, 2003a; Vanhees et al., 2005). This trend of adolescents moving less in conjunction with eating more can be deemed as a contributory factor in obesity amongst this age group. However, Schneider (2000) found that Irish adolescent showed high physical activity patterns when compared to 28 other countries worldwide. Of particular importance is the role played by

the GAA in the sporting/physical activity practices of Irish society. As the national games of Ireland, Gaelic football and hurling attract large numbers of people, particularly children (McIntyre, 2005). Studies examining adolescent physical activity in Ireland, observed GAA (football and hurling) and soccer as the most popular sports for boys and basketball, Gaelic football and swimming the most popular sports for girls (Fahey et al., 2005; Department of Health and Children, 2007).

Özdirenç et al. (2005) argued that physical inactivity is in essence quitting the habit of exercising which is necessary for a healthy life suggesting that health and physical fitness run in parallel with a good life (Finn et al., 2002). Young people drop out of activities as they progress through adolescence into adulthood in a natural and possibly an expected manner due to factors such as losing interest in activities, the activity losing importance in their lives and not liking those in charge of providing activities (de Róiste and Dinneen, 2005). The cost of physical inactivity to Irish society may exceed €30 million per annum in health costs but there may also be social and psychological costs to individuals due to weight gains, unsocial living, and an unhealthy lifestyle (NTO, 2005). The prevalence of physical inactivity is a worldwide trend with countries such as the United States and the United Kingdom annually spending approximately \$25 million (€18 million) and £8.2 (€13.9 million) respectively in health care costs due to physical inactivity (NTO, 2005). Pratt et al. (2000) estimated that increasing the activity levels of American citizens over the age of 15 years of age may reduce medical costs by approximately \$76 billion annually.

Adolescents and children may be physically active however, since the 1990's a trend has emerged in which adolescents do not appear to be taking part in adequate levels of physical activity to benefit health. This trend appears to have occurred in a relatively short period of time and appears to have continued to the present with adolescents spending more time in sedentary activities, especially during early adolescence. This decline in physical activity can be expected to rise in western societies around the world potentially resulting in health problems such as obesity. As a consequence there may be a need to encourage 9 to 18 year olds, the critical time of dramatic decreases in physical activity, to become more active which may result in the possibility that they will remain physically active into adulthood.

Sedentary living may in turn increase the risk of various illnesses and diseases such as obesity, which may be prevented by regular physical activity. Physical inactivity appears to be a growing health problem in modern western societies and may offer greater risk of disease than smoking and/or a poor diet. It may be plausible to suggest that inactivity may be in essence quitting exercise and may cost Irish society €30 million annually in health costs but there may also be social and psychological costs to physically inactive individuals. Globally it has been estimated that physical inactivity causes approximately 1.9 million deaths worldwide annually.

Factors associated with adopting and maintaining a physically active lifestyle can include cultural influences, lifestyle, environmental factors, education, gender, family and peer influence and health status. In particular the encouragement received from parents and parental involvement in sport/physical activity can influence their child's physical activity patterns positively. Boys appear to be more active than girls who begin physical inactivity at an earlier age than boys. Membership of sports clubs can offer adolescents the opportunity to enhance their interest in sports, perhaps with more regularity than casual involvement in sports/physical activity. In most instances sports clubs provide facilities such as pitches, changing area and equipment, plus the advice of coaches which can be beneficial to the individual and potentially society by providing the adolescent populace with an outlet, a place/location to meet others. But in turn clubs need to follow the government recommendations with regard to appropriate behaviour amongst leaders towards adolescents and to provide fitting programmes. However, it appears that boys appear to be more involved in competitive sports clubs than girls, who appear to favour less competitive activities.

In an Irish context, the GAA play an important role in the physical activity patterns of children and adolescents through the provision of sports/physical activities such as Gaelic football and hurling. As previously indicated physical activity may take place in many settings – in exercise, sport, leisure, transportation, for fitness reasons, in the home and through work. But it now appears that work related physical activity may also be in decline with technological advances and labour saving computerised devices. With adolescents

being involved in the workforce, this factor may also aid declining levels of interest and participation in physical activity. The next section will look at physical activity in schools.

2.5 Physical Activity in School

As children and adolescents spend a considerable amount of time in school (Ball et al., 2006) the provision of physical education in school has an important role in encouraging adolescents to be physically active. With educational facilities having the ability to reach a vast number of children/adolescents influencing nutrition and physical activity behaviours, schools may therefore have the ability to encourage an early interest in all forms of physical activity (Sallis et al., 2001; Pate et al., 2005; Department of Health and Children, 2007). In general, the school/education experience becomes a major socialising agent for young people throughout their time in education (Connor, 2003). Telama et al. (2005) concluded that they considered it important to promote school-based physical activity which may influence adult physical activity in later life and in turn improve the health of the general population. Physical activity has been reported to be in decline during adolescence over the last few years (WHO, 2003) but similar declines have also been reported in physical education worldwide with inactivity more prevalent in girls (Aarnio et al., 2002).

New physical education syllabus recommendations in Ireland highlight the need for second level school-goers to participate in 2 hours of physical education per week (Department of Education and Science, 2007). However, although schools may offer physical education as part of its curriculum, the provision of physical education has declined in many countries due to factors such as lack of trained staff, reductions in physical education in favour of academic subjects and/or lack of priority given to physical activity (Aarnio et al., 2002; Pate et al., 2005). This in turn can be viewed to impact activity levels outside of school hours (EHHI, 2001). Similar trends also appear in Ireland with second level students apparently receiving less physical education than recommendations (Fahey et al., 2005). Schools (staff and programmes) may often fail to provide core activities recommended by the physical education syllabus for those in secondary education. For example, activities such as dance and swimming may not be available while traditional activities such as

basketball, soccer, athletics and particularly Gaelic Games appear to dominate physical education timetables (Department of Health and Children, 2007). Özdirenç et al. (2005) indicated that school structures can contribute to sedentary lifestyles of adolescents as a result of limited financial resources which have contributed to less physical activity instruction, playgrounds and after-school physical activity programmes. Some other barriers to physical education included adolescents not liking being 'forced' to participate in physical activities and/or having to be supervised in changing rooms by teachers (Mulvihill et al., 2000). In particular, girls may form negative views of school based physical activity and dislike physical education (Mulvihill et al., 2000).

Physical activity patterns of adolescents during school hours seem to follow the trend of boys being more drawn toward competitive sports while girls preferred participating casually in gymnastics, swimming and tennis (Mulvihill et al., 2000; Department of Health and Children, 2007). Clemmens and Hayman (2004) found that 70 per cent of high school students in the United States did not attend daily physical education and the remaining 30 per cent had limited physical education participation. Similarly less than half of all Irish adolescents in second level education are attending physical education (Connor, 2003). Participation in school based physical education programmes was also associated with the likelihood of participation in physical activity outside school hours (Gordon-Larsen et al., 2000). Westerstahl et al. (2005) stressed the importance of physical education in promoting physical activity to young people and encouraged physical education teachers to offer challenging activities to stimulate students physically. A potential danger in school provision may be that some schools may place an emphasis on a particular sport/activity therefore; every pupil must participate in this activity which may result in a reduced exposure to other activities (de Róiste and Dinneen, 2005). For example, Gaelic Games may be more popular in boys' schools while hockey, basketball and volleyball may be more common in girls' schools to the detriment of other activities.

Break times also offer the opportunity for adolescents to be active during school time. This was recognised by (Mulvihill et al., 2000) who found that there was a trend for adolescent boys to be more physically active at break and lunchtime while girls on the other hand

tended to be less active, preferring to walk or sit around talking to friends. Indeed a trend emerged in a study in Scotland where it was noted that a popular non-curriculum activity for adolescents was 'hanging-out' with friends (Wills et al., 2005). In European countries, it has been reported that physical activity levels of girls while in school were lower than those of boys of similar age (EHHI, 2001). After school and weekends are also critical times associated with activity for young people (EHHI, 2001). Frequent participation in sport/physical activity after school hours during adolescence was associated with a high level of physical activity in adulthood (Tammelin et al., 2003). In this regard, adolescent boys tended to continue physical activity levels while girls continue sedentary activities such as going to friend's houses listening to music, chatting, or watching movies after school (Mulvihill et al., 2000). Exposure to physical activity during school may be especially important for adolescents with Aarnio et al. (2002) establishing a link between participation in school-based sports/physical activities during adolescence with participation in physical activity into adulthood.

Schools – staff and programmes, play a vital role in encouraging children and adolescents to be physically active. With compulsory attendance required in school until the age of sixteen resulting in large numbers spending a large amount of time in attendance, schools – policies and staff, play an import role in influencing adolescent physical activity. However, similarly to declines in physical activity and despite physical education being offered in schools; physical education provision appears to be in decline in many countries. There may be many reasons for this decline but factors such as limited financial resources, lack of trained staff, emphasis of academic subjects and/or the priority, or lack of priority given to physical education by the school can be attributed. These factors in turn can be viewed to impact physical activity levels outside school hours, as studies indicate a link between school-based activity and participation in physical activity outside school time. In the context of participation, links have been identified between school based activities and participation in physical activity into adulthood. Similar to participation in physical activity, and in a physical education context, boys appear to prefer competitive activities while girls appear to enjoy casual based activities and often dislike or have a negative view towards physical education. Break/lunch times also offer opportunities for activity but

boys appear to be more active during this time while girls appear to prefer socialising. This trend of competitive seeking boys and sedentary seeking girls continues after school hours and into weekends. But despite the benefits of physical activity, there may be factors which prevent participation in physical activity; these will be outlined in the next section.

2.6 Barriers to Physical Activity

There appears to be many barriers associated with adolescent participation in physical activity. These can vary from apathy, tiredness, no one to exercise with, injury, poor climate, lack of a safe location, poor motivation, poor self-esteem and embarrassment about their body shape (particularly amongst girls) (Mulvihill et al., 2000; Brownson et al., 2001). The preference of non-physical activities and time constraints of school and part-time occupation, high consumer costs, poor access, poor facilities and programmes can also be barriers (Robbins et al., 2003; Department of Health and Children, 2007). Other barriers to physical activity, include lack of adequate adult supervision, a reduction in play time in parks, the need for motorised transportation to facilities and computer and television as a means of recreation (Mulvihill et al., 2000; EHHI, 2001; O'Sullivan Ryan, 2005).

The concern for safety and the fear of being a victim of a crime was also seen as a barrier to using neighbourhood resources for physical activity (Addy et al., 2004; TRB, 2005). Indeed safety concerns may include travel to and from activities and can be an urban and rural issue for young people (Department of Health and Children, 2007). The obstacles to using bicycles as a means of transportation appear to be plentiful. Frequent obstacles cited include poor roads, bad weather, the risk of theft or abuse, safety concerns – lighting and exposure to traffic, and the lack of storage and changing facilities (Addy et al., 2004; Dowler, 2001; French et al., 2001; Hackett, 2005). Unattended dogs, fear of crime and untrustworthy neighbours can also inhibit participation in physical activity (Addy et al., 2004). However, a forgotten group may be rural adolescents who may be faced with difficulties due to lack of facilities, absence of transportation and programmes when compared to urban adolescent (de Róiste and Dinneen, 2005; Department of Health and Children, 2007).

Adolescents appear to recognise the benefits of leisure activities in helping relieve stress and appear to enjoy participating in physical activity (Connor, 2003). Leisure pursuits can provide relaxation and offer a break from homework; however, adolescents may also experience difficulty with leisure participation due to transport difficulties and lack of money, particularly for structured activities such as going to a swimming pool (Shannon, 2006). Adolescents may also have developed changing attitudes toward physical activity, in that, when they were younger they viewed physical activity as being a casual activity but with the onset of puberty they viewed physical activity as being more structured (Mulvihill et al., 2000). Societal changes can also be a factor in physical inactivity. Mulvihill et al. (2000) suggest that adolescents may be more physically active if provisions and access to sites where they can meet friends in a cost friendly and socially enjoyable setting can be created. Added to this increased usage of electronic based activities; television use, mobile phone use, computer games, Internet access may have allowed adolescents to develop patterns of inactivity and sedentary living (French et al., 2001; Marren, 2005; Nelson et al., 2006; Department of Health and Children, 2007).

Watching television, computer games and listening to music appear to be widespread within the adolescent population in Ireland with the trend of 'hanging around' appearing to be well accepted, thus popularising sedentary trends amongst Irish adolescents (de Róiste and Dinneen, 2005). Time devoted to television, video games, computer and internet use appears to be increasing (Molnár and Livingstone, 2000) with television viewing being significantly related to physical inactivity in both males and females (Koezuka et al., 2006). Sedentary behaviours such as watching television and videos/DVDs, computers and playing video games may also be an important part of young people's daily lives but they are also risk factors for obesity in youth (Sallis and Glanz, 2006). Parents having less time for play time with children may also lead to increased participation in sedentary activities which in turn may progress into adolescent and adult sedentary behaviours (O'Sullivan Ryan, 2005). In turn parents may need to discourage their children away from sedentary activities in favour of a more active lifestyle (Strong et al., 2005).

French et al. (2001) reported that virtually every household in the United States has at least one television, with many homes having more than two televisions. Özdirenç et al. (2005) concurred with these data and noted the ease to which the current generation of children and adolescents have adopted a lifestyle of watching television or playing video games rather than participating in physical activities. Television plays a prominent role in dominating adolescent leisure patterns in Ireland with a high frequency of adolescents having televisions in bedrooms, often with multi-channel capabilities (Connor, 2003). Of Irish adolescents, it was found that in comparison to other countries; Irish adolescents, 13 and 15 year olds, ranked 22nd and 25th of 28 countries in terms of watching television (WHO, 2000). Although watching television is a popular pastime for adolescents, boys may be more likely to watch television and play computer games while girls were found to read books and do homework (WHO, 2000; Utter et al., 2003). This may lead to a problem with too much television viewing obstructing child/adolescent participation in physical activity (Wing et al., 2001). Utter et al (2003) found that energy intake for boys and girls was positively associated with television and computer use. For example, consumption of snack foods and soft drinks occur in conjunction with engaging in sedentary activities such as watching television and playing computer games. Therefore, limiting television viewing, increasing awareness of the benefits of healthy foods and promoting physical activity can counter this trend (Wing et al., 2001). In the future the twentieth century (1960's to the end of the 1990's) may be characterised as the time of technological transformation (TRB, 2005) which has resulted in sedentary living and a move away from active living.

Other barriers associated with physical activity include attitude of parents to physical activity, family income, peers, education, teachers' interests and community recreation facilities (Gordon-Larsen et al., 2000 and Mulvihill et al., 2000). Shannon (2006) stated that parents are important in helping their children to develop the values of leisure behaviour which may continue to have an effect on the child into adulthood. If parents have a negative attitude toward physical activity; their children may be more likely to form similar views toward physical activity (Mulvihill et al., 2000). Socio-economic background can also affect attitudes to participate in physical activity (Connor, 2003;

Westerstahl et al., 2005; Özdirenç et al., 2005). For example, those from working class backgrounds appear less likely to be physically active (Connor, 2003) as they may not be able to afford to participate and where facilities are free, crime or the risk of crime can inhibit involvement (Dowler, 2001; Garcia Bengoechea et al., 2005). Sallis et al. (1998) suggested that encouraging people to be physically active in their neighbourhood may be irrelevant to those from low-income areas due to poorly maintained paths, parks controlled by drug dealers, lack of free recreational programmes. Ethnic minorities can also face an array of barriers to participation due to language difficulties, contradictory cultural difference, lack of family support and lack of finances to be physically active (Department of Health and Children, 2007).

Those from middle class groupings appear more likely to be physically active (Connor, 2003) and may also have the monetary means to an array of safer activities. Giles-Corti and Donovan (2002) suggested that people from lower socioeconomic areas considered their neighbourhood to be an unattractive and unsafe venue for physical activity and may be more likely to face financial barriers to participation in activities than those from more affluent areas (de Róiste and Dinneen, 2005). On the other hand, Molnár and Livingstone (2000) credited affluence with physical inactivity and sedentary living with use of motorised transportation, mechanical equipment and other energy saving appliances apparently replacing walking, climbing stairs and manual work. Then again, having wealth may aid declining levels of physical activity with the ability to purchase these energy saving sedentary devices (TRB, 2005). However, technology may also have created opportunities to be physically active through the invention of treadmill, stationary exercise bicycles and rowing machines (Buchner and Miles, 2002).

There are many barriers to physical activity which can be considered material, personal or social obstacles. Although technological equipment has been designed for physical activity, technology may have contributed to hindering physical activity with televisions, video games and energy saving devices supporting a preference for sedentary living thus obstructing physical activity. Other factors inhibiting physical activity include attitude of peers, parents, teachers and community involvement and interest in physical activity.

While socio-economic factors can also be a barrier in differing ways for both the underprivileged and affluent. It may be important to identify these barriers in order to address the reasons which may prevent participation in physical activity in order to encourage adolescents to become physically active to meet recommended levels. At this point it may be important to address recommended levels of physical activity.

2.7 Recommended Levels of Physical Activity

There appears to be some confusion with regard to recommended levels of physical activity with some sources recommending proposals from daily activity, with other sources recommending weekly activity levels (NTO, 2005). Various sources recommend participation in physical activity for twenty to thirty minutes of moderate to vigorous physical activity five to seven days per week (Blair et al., 2004; Gordon-Larsen et al., 2004; TRB, 2005). But this level of physical activity may not be sufficient to influence percentage body fat levels of overweight children and adolescents (Strong et al., 2005). On the other hand Wing et al. (2001) and Bull (2003) recommend at least one hundred and fifty minutes of moderate physical activity per week, adding that although this may appear insignificant, for many in the population this may be too demanding or prove to be insufficient to prevent weight gains (Blair et al., 2004). Bull (2003) added that this threshold has been recognised and adopted in many countries as the recommended level of physical activity for general health benefits. However, although this level of physical activity may appear modest, it may still be too demanding for the majority of people.

Recommendations of sixty minutes of moderate physical activity each day are also common (NTO, 2005; O'Sullivan Ryan, 2005) which can occur in fifteen minute intervals. Thirty minutes of physical activity daily should provide substantial health benefits for sedentary people but this can vary depending on an individual's dietary intake and their capacity for activity (Blair et al., 2004). However, despite the variety in recommendations for physical activity participation, there may be a need to review current recommendations of physical activity in order to differentiate between physical activity for the prevention of weight increase and physical activity for general health benefits (NTO, 2005). Glasgow et

al. (2001) recommended the need for physical activity to join weight, blood pressure, and smoking as a vital sign to be examined during routine visits to health clinics. However, solely educating health care professionals on recommended physical activity practices may not prove to be successful alone in changing physical activity attitudes (Albright et al., 2000; Glasgow et al., 2001) as ongoing monitoring and follow-up evaluations by health care professionals may prove more beneficial in the long-term.

Recommending a single mode of physical activity for a broad range of people may have minimal effectiveness and can be ineffective for public health purposes (Blair et al., 2004). In a Canadian study Warburton et al. (2006) found that current physical activity guidelines were sufficient to cause health benefits to all people, especially sedentary people. However, recent trends from countries worldwide show that recommended standards of physical activity for health benefits and weight prevention are not being met (NTO, 2005). Less than half of the adult populations in many countries are undertaking thirty minutes of activity, such as walking per day (Bull, 2003). Several studies recommend accumulating various activities preferably every day of the week. This can allow the participant to gain the recommended level of physical activity in short bouts which can be beneficial, especially to children, in achieving a total one hour of physical activity per day (Epstein et al., 2001; Wing et al., 2001 and TRB, 2005). The accumulation of activities was also advocated by Epstein et al. (2001) who encouraged physical activity rather than physical fitness for children and adolescents, which may be too intense. In combination with accumulating activities, combining various activities; walking, cycling and swimming, may also be beneficial in achieving recommended levels of physical activity (Giles-Corti and Donovan, 2003a). Accumulating takes into consideration activities such as walking and cycling to and from school, playground activities and household chores which may be considered less formal and these activities can make improvements to physical activity levels and health in general (Epstein et al., 2001; Strong et al. 2005). Meeting recommended guidelines of physical activity should be used as a stepping stone to longer durations of activity by people who wish to improve health and fitness (Blair et al., 2004).

Recommended guidelines for physical activity can differ but generally twenty to thirty minutes of daily physical activity may be beneficial to the general public. However, sometimes people may have difficulty reaching twenty to thirty minutes of daily physical activity and an option for these people may be to reach recommended guidelines through the accumulation of exercises. For example, by walking for ten minutes, cycling for ten minutes and swimming for ten minutes, this would allow an individual to reach thirty minutes of daily exercise. Often one mode of exercise may be ineffective for the wider population therefore, it may be essential for people to use a variety of exercises to achieve recommended guidelines. There may also be a need for health experts to be knowledgeable on physical activity guidelines to differentiate between recommendations for health benefits and recommendations for weight loss. Health experts may also need to include physical activity participation in medical examinations. The next section will examine active transportation, perhaps a forgotten source of physical activity.

2.8 Active Transportation

According to Sallis et al. (2004) active transportation refers to activities such as walking and cycling which people can use for transportational and/or recreational purposes (Giles-Corti and Donovan, 2002; Sjolie and Thuen, 2002). Perhaps the most obvious purposes of active transportation may be the journey to work, to school or to shops which can be considered natural methods of physical activity. The most common and easiest form of active transportation and indeed physical activity may possibly be walking (Buchner and Miles, 2002). Walking in combination with cycling may be potentially the more successful modes of exercise and travel, and enjoy popularity due to their relative ease of mastery and little risk of injury (Handy et al., 2002). Lee and Vernez Moudon (2006) suggested that while transportation walking may be more destinations based – walking to a specific building along the shortest route, recreational walking may be more flexible with the walker choosing various routes based on the quality of that particular route.

However, walking and cycling may be limited in terms of time constraints when compared to the time taken to drive or be driven to destinations which may inhibit people from using

them as modes of transport (French et al., 2001; Handy et al., 2002). It should also be noted that walking and cycling may require totally different sites as one may interfere with the other, for example, cycling may impede walkers and may be prohibited on footpaths (TRB, 2005). Indeed a report published by Spatial Planning Unit (SPU) (2001) forecasted that walking and cycling may be likely to fall in popularity in the future. This coincided with a report by the Department of the Environment and Local Government (2002) which indicated declines in walking and cycling from 1986 to 1996. Similarly Hussey et al. (2001) found that as little as 40 per cent of children walked to school in Dublin regularly. A study conducted in the United States found that approximately 5 per cent of high school students walked and 3 per cent cycled to school at least once every week (Evenson et al. 2003). Also in the United States it was found that boys have a higher rate of active transport to school but declines in walking to school had affected both genders equally (McDonald, 2007) in effect presenting a lost opportunity with regard to physical activity. Nonetheless, these activities may be beneficial in promoting physical activity amongst the greater population, particularly those who may be inactive (Brownson et al. 2000). Walking appears to be an acceptable, accessible means of transportation which may encourage people to be more physically active. This may be achieved by using simple means such as using stairs rather than escalators and parking further from destinations.

Although walking may be a popular activity, few people participate adequately to form any health benefits (Giles-Corti and Donovan, 2003a). Despite the important health benefits offered by walking, there are factors which may further aid the attraction of the activity. For instance, attractive and safe footpaths and having a companion to walk with may help (Frumkin, 2002; Giles-Corti and Donovan 2003a). Implementing policies offering access to footpaths, walking trails and cycle paths may be essential to encouraging children to walk and cycle to school and to other leisure activities (Sjolie and Thuen, 2002). This may result in a more active transport thought process on the part of the children concerned. Ziviani et al. (2004) suggested that walking habits formed by children to and from school may also carry over into other activities such as walking to shops and to parks. According to Cooper et al. (2003) the journey to and from school may offer the ideal opportunity for children to increase their daily physical activity levels and found that walking to school was

associated with higher physical activity after school and during the evening, especially amongst boys. Sjolie and Thuen (2002) found that urban adolescents may be more likely to cycle or walk to school and for recreation than their rural counterparts. However, distance issues may not allow rural adolescents a realistic opportunity to walk or cycle to school. Research does point to children walking and cycling to school (Staunton et al., 2003; Cooper et al., 2005) however, their frequency to use these forms of transportation to local destinations was relatively low but generally boys walked or cycled to local destinations more often than girls (Timperio et al., 2004).

There appears to be age differences in the modes of transport to and from school. For example, approximately 112,000 5 to 12 year old children were categorised as travelling to school on foot compared with 82,000 13 to 18 year olds (CSO, 2004). However, it may be unlikely that 5 to 12 year olds would be allowed to travel to and from school unaccompanied by a parent/guardian. While a reverse trend was observed in cycling trends with just under 5,000 5 to 12 years olds listed as cyclists to and from school compared with 11,000 13 to 18 year olds (CSO, 2004). Ziviani et al. (2004) and Sirard et al. (2005) found children had a low tendency to walk to school and suggested that walking to school only occurred on average once a week in their study of Australian children. Nonetheless children who travelled to school by means of active transportation were associated with higher levels of physical activity compared with those who travelled by car (Cooper et al., 2005). However, the most popular mode of transportation to and from school in Ireland was being driven in a motor car (CSO, 2004). Distance to schools may be the principle determinant on why children/adolescents do not walk or cycle to school with any degree of regularity (Di Guiseppi et al., 1998; Sallis and Glanz, 2006). Modern residential housing schemes appear to have been forced further away from urban centres, potentially increasing the distance to schools for many. This may be the case for many older schools built in centralised urban areas away from modern housing.

Parental perception may also be an important factor in discouraging children to walk and cycle as an activity and parents' history of walking to school, perceptions of the importance of physical activity, concerns of traffic and safety may also influence their opinion of active

transport activities (Timperio et al., 2004; Ziviani et al., 2004). Di Guiseppi et al. (1998) found that parents, who worry about their children's safety while walking and/or cycling; strangers and traffic, may be more likely to drive their children to and from school. However, Timperio et al. (2004) noted that parents of older children were less likely to be concerned about safety (traffic and strangers) than parents of younger children. Generally it may be assumed that parental concerns about safety may prevent children from participating in active transportational activities as parents may be likely to act on fears regardless of actual crime, abduction or accident statistics (Sallis and Glanz, 2006).

In recent years transportation trends have changed in that walking and cycling has decreased while private vehicle travel has increased (McMillan, 2007). Modern personal transportation appears to have been dominated by automotive travel with an estimated one billion cars having been constructed in the twentieth century which may have led to motorised travel being the most convenient mode of travel thus affecting physical activity levels (Sheller and Urry, 2000; French et al., 2001; TRB, 2005). In Ireland there has been a 50 per cent increase in the number of motor vehicles from 1990 to 2000, with further increases in the number of motor vehicles expected (SPU, 2001; Department of the Environment and Local Government, 2002). Frank (2000) suggests that the growth in motor vehicle transportation may be associated with income increases resulting in more people owning motor vehicles, greater public investment in road construction and a greater dependency on using land for motorised transportation. In turn, motorised travel may affect air pollution, water quality, the number of pedestrian accidents, auto accidents and physical inactive sedentary living, thus affecting public health and urban sprawl (Frumkin, 2002; Glaeser and Kahn, 2003).

Indeed the current pattern of motorised transportation may equal less physical activity which in turn may result in even greater traffic on roads (Mullan, 2003; Cooper et al., 2003). Although in recent years there appears to have been decreases in the number of road accidents in Ireland (CSO, 2003) fewer people appear to view roads as being as safe now as in the past. As a result this may have created a negative perception of the safety of activities such as cycling, walking and playing near roads (Mullan, 2003). The National

Roads Authority (NRA) (2004) indicated that the number of road deaths in Ireland has indeed decreased from 472 people in 1997 to 374 people in 2004. In 2004, 982 pedestrian accidents occurred in Ireland with 70 people losing their lives, while 298 cycling accidents occurred during this period with 11 people losing their lives (NRA, 2004). Research suggests that male pedestrians and cyclists aged between 10 and 20 years appear to be involved in more accidents than their female counterparts. 115 male pedestrians were injured with 2 deaths compared to 98 female injuries and 2 deaths in 2004 (NRA, 2004). Similar patterns appear in cycling accidents with 58 male injuries and 1 death compared to 6 female cycling injuries and no deaths for the ages of 10 to 20 years (NRA, 2004).

Children may be more likely to be injured while using a sports facility, but accidents in the home or yard and school may also be as common as road accidents (Department of Health and Children, 2006). Posner et al. (2002) reported that urban children involved in pedestrian accidents reported a high exposure to road traffic and used roads and footpaths as play areas but also found that children in their study were not injured while commuting to school but while on their way to other destinations. Supporting this, the NRA (2004) showed that more accidents occur in what they term 'inside built-up areas' within town boundaries than 'outside built-up areas' (outside town boundaries) with a combined pedestrian and cycling total of 1,069 accidents and 53 deaths inside built-up areas compared to 130 accidents and 28 deaths outside built-up areas. Areas with high motorised traffic and parking may be considered to be an inappropriate place for children to live and may be a poor location for physical activity. Ideally an environment relatively free of traffic may be perceived as a nicer, more pleasant environment to live and play (Mullan, 2003). A report published by TRB (2005) encourages the use of traffic calming measures such as speed ramps, horizontal deflections and road narrowing to slow cars down to ensure the safety of walkers and cyclists. Improving the road, footpath and cross walk safety may reduce parental concerns about traffic danger and encourage more active transportation amongst children/adolescents (Sallis and Glanz, 2006). However, ultimately the dominance of motor vehicles on residential roads may reduce the attractiveness, quality and destroy early patterns of urban and rural life while potentially reinforcing parental safety concerns (Sheller and Urry, 2000; Mullan, 2003).

Environmental obstacles to physical activity may be an important factor which may be adapted to assist behaviours such as walking, cycling and other forms of exercise (Powell et al., 2006). Factors such as having active neighbours, access to footpaths and using shopping centers were also found to be associated with regular walking (Addy et al. 2004). Barriers to walking can vary from the distance from destinations, adverse climatic conditions, traffic, lack of adequate lighting, unsafe road crossing, lack of a companion, poor footpath condition and lack of changing/locker facilities (Ziviani et al., 2004; Timperio et al., 2004; Sirard et al., 2005). However, Norman et al. (2005) did not find any evidence to support the notion that environmental factors such as safety (crime and road traffic) were associated with time spent in sedentary behaviours. Neighbourhoods can affect the likelihood of walking and exercising in many ways. People who live in poorer neighbourhoods had a higher level of walking than those “in less disadvantaged places” due to a high level of density in the area where they lived, despite fears for their safety, which appears to encourage walking (Ross, 2000, p. 265).

But somewhat conversely to this Ross (2000) found that residents who attained a college education also walk with a large degree of frequency as a form of exercise and in turn encourage their own children to walk on the basis of the parents’ participation in walking. Children who live in a neighbourhood with many other children may have more opportunities to walk or cycle to school in the company of other similarly aged children (Timperio et al., 2006). Negative factors associated with children/adolescents walking and cycling to school may include long distances to school, lack of footpaths, a need to cross roads and poor lighting and personal safety concerns (French et al., 2001; TRB, 2005; Sallis and Glanz, 2006; Timperio et al., 2006). The location of the school in relation to residential areas and major traffic routes may also be an important factor that should be considered by urban planners (Sallis and Glanz, 2006; Timperio et al., 2006). However, it could not be clearly determined whether people were more likely to walk due to environmental factors or because of personal circumstances (Craig et al., 2002).

However, another major factor in the prospect of children and adolescents engaging in an active transport activity to school may be the weight of the school bag and the subsequent

inconvenience of carrying heavy items (French et al., 2001). Previous studies have examined the weight of school bags and have recorded results as a percentage of body weight (Pascoe et al., 1997; Whittfield et al., 2005). Actual bag weight can vary according to the number of books and accessories – copy books, text books, pens, pencils, pencil case and lunch. A study conducted in Australia reported that the average weight carried by school children was 5.3 kilograms, with the majority of school text books weighing between 0.5kg and 1kg (Grimmer et al., 1999). While Negrini et al. (1999) found the average weight carried by year six Italian schoolchildren (children aged 11 years) was 9.3 kilograms equating to 22 per cent of their body weight. Similarly Viry et al. (1999) found that the average weight of a school bag was 9.6 kilograms.

An article written for the Irish Examiner reported that a 10 year old Irish school child carried a school bag weighing 6.4 kilograms, just over 1 stone/14 pounds (McSweeney, 2002). Interestingly Chansirinukor et al. (2001) recommend that adolescent school children should not carry a backpack weighing over 15 per cent of their body weight to avoid developing poor posture and ultimately injury. In a study conducted in Ireland the average weight of a school bag amounted to 6.2 kilograms (Dockrell et al., 2007). Indeed the issue of school bag weight was highlighted when a Labour Party representative raised the topic with the European Commission, the Department of Education and the Health and Safety Authority stating he:

“believed the weight of school bags, which is often as much as two stone, is a serious concern and I am of the opinion that it could cause spinal damage and other injuries, which may not become obvious until later in life” (McSweeney, 2006, p. 8).

Walking and cycling are perhaps the most recognised methods of active transportation with their relative ease to master with little risk of injury. However, active transportation can have time drawbacks when compared to motorised travel which appears to be more popular presently despite the health benefits associated with walking and cycling. Walking and cycling in turn may offer the ideal opportunity for school children/adolescents to attain recommended daily levels of physical activity should trails/paths exist for this purpose. However, it may be unrealistic to recommend cycling and walking practices for younger

children but by the same token encouraging adolescents to walk in particular may be part of a long term strategy to encourage active transportation which appears to be in decline. The most popular form of transportation for children appears to be motorised travel as passengers due to distance, safety and traffic concerns as the main reasons dissuading parents from letting their child/adolescent walk or cycle with regularity to school.

Although statistically there appears to be a decrease in the number of road accidents, the perception may be that the roads are just too unsafe for active transportation. Males in particular appear to be more at risk when compared to their female counterparts in pedestrian and cycling accidents and deaths that occur on Irish roads. While more pedestrian and cycling accidents and deaths occurred ‘inside built-up’ areas (urban areas) than ‘outside built-up’ areas (rural areas). Factors influencing active transportation may include living in a neighborhood conducive to physical activity, having active neighbours and access to footpaths. While barriers can vary between the distance from destinations, poor climate, lack of adequate lighting, poor condition of footpaths and/or lack of changing facilities. The weight of school bags can be a major factor with bags weighing anything up to 9 kilograms thus preventing adolescents attaining physical activity naturally. This section has examined physical activity; definitions, benefits, current trends with regard to physical activity, barriers, the role of schools, recommended levels of physical activity and active transportation. At this point it may be necessary to examine where adolescents can go to become physically active. The next section will examine the built/physical environment.

2.9 Built / Physical Environment

The physical activity patterns of young people can occur in a multitude of locations whether in the home, at work, at school, in travel and/or in leisure (Handy et al., 2002; TRB, 2005; Ommundsen et al., 2006). The availability of suitable resources devoted to physical activities can be a factor in one’s participation in physical activity (Shannon, 2006). In line with this, a report published by the EHHI (2001) noted that young people were more likely to be physically active if they spend time outdoors. However, due to the

range of environments in which people reside, there may or may not be an environment suitable for adequate physical activity patterns for all people (Ball et al., 2006). This may refer to indoor and/or outdoor environments. The setting for physical activity may be broadly referred to as the built or physical environment (Brownson et al., 2004) which may combine with neighbourhoods, buildings, transportation systems and recreational facilities in which people live, work, eat and play (Handy et al., 2002; TRB, 2005; Sallis and Glanz, 2006). These can combine to either form opportunities to facilitate or constrain physical activities.

According to (Giles-Corti and Donovan, 2003a; Giles-Corti et al., 2005) the physical environment may be an influencing factor in encouraging people to be active with access to public open spaces, footpaths or routes to walk cited as a reason for people to be active. Vernez Moudon (2005) stressed the importance of matching the social environment (a place where people can meet) and the physical environment (a park) in order to identify physical environmental variables associated with physical activity. However, this may prove to be increasingly difficult as the built environment may be constantly changing, renovated and /or rebuilt (TRB, 2005). The physical features of the urban environment can influence the way people live and work and have a direct impact on peoples' mobility and social interactions (Ball et al., 2001; Semenza, 2003). A report by TRB (2005) reported that the built environment has come under recent examination as an important contributor in reduced levels of physical activity. Over the past 40 years changes to the built environment appear to have promoted and contributed to sedentary lifestyles and unhealthy diets (Sallis and Glanz, 2006). In turn Ewing et al. (2003) associated land use development patterns with physical inactivity and obesity.

Specifically defining the built/physical environment solely for physical activity purposes may prove to be challenging due to people living, working, travelling and exercising in a multitude of geographical locations (Ball et al., 2006). However, the built/physical environment may comprise of urban design, land use and the transportation system (roads, rail, cycle paths and footpaths) and includes patterns of human activity, such as physical activities, which may also be referred to as a multidimensional concept (Handy et al.,

2002). A publication by the TRB (2005) referred to land use as relative proximity and variety in terms of different amenities and activities which can be catered for on a particular site such as houses, parks and commercial buildings. By combining urban design, land-use patterns and transportation systems, these may promote walking and cycling to create active and healthier communities (Handy et al., 2002). The way the built environment is created can affect many daily decisions and possibly affect children's weight by shaping eating habits and choice of activity (Sallis and Glanz, 2006). Therefore it may be important for characteristics of the built environment to be varied to provide opportunities for a multitude of differing people and their choice of differing physical activities.

Young people can participate in activities in a multitude of locations broadly referred to as the built/physical environments. These can also refer to the setting where people live, work, travel, eat and exercise. In turn the built environment can form opportunities to facilitate or constrain physical activities. In recent years, the built environment has changed as a result of constructional expansion resulting in changes to residential, commercial and communications sites with the effect of inhibiting locations for physical activity. This in turn may point to reduced participation in physical activity as a result of fewer locations for participation. Design factors of the built environment may be an important factor in encouraging people to be active and by combining design with land use patterns and communications systems this may promote activities to support a healthier more active community. However, the built/physical environment may contain many characteristics; these will be explained in the next section.

2.9.1 Built/Physical Environment Characteristics

According to Bedimo-Rung et al. (2005), physical environment characteristics may include aesthetics (design and attractiveness), safety, access (availability), condition, features (facility and programmes) and policy (management and budget). Factors such as location, proximity, convenience, traffic congestion, terrain and the weather may also be considered to be physical environment characteristics (Humpel et al., 2004). These physical environment characteristics can be referred to as 'logical categories' but by the same token be the least understood influences on physical activity (Humpel et al., 2002). Sallis et al.

(1998) suggested that the built/physical environment can be comprised of numerous settings (the neighbourhood, workplace and school), facilities (health clubs, parks and cycle paths) and programmes (activity classes, club activities) all of which may be supportive to physical activity patterns of people. Neighbourhood characteristics include the presence of footpaths, neighbourhood aesthetics, enjoyable scenery, traffic and hilly terrain (Brownson et al., 2001; TRB, 2005). Factors such as aesthetics, safety, traffic, hills, trails and the availability of adequate facilities may contribute to encourage physical activity (Powell et al., 2006). Although the contribution of aesthetic qualities in promoting physical activity may be difficult to establish, aesthetic qualities may nonetheless add to the appeal and attractiveness of a site (TRB, 2005).

Norman et al. (2005) categorised environmental variables as being recreation variables (number of private recreation facilities, number of schools and parks) or community design variables (residential density, land use mix and walkability index). Certain aspects of the physical environment may be an important factor in the risk of people becoming overweight and obese as people appear to have become more dependent on using technology which minimises energy expenditure (Giles-Corti et al., 2003b). For example, the lack of adequate footpaths may deter people from participating in walking. Collins Perdue et al. (2003) could not establish a clear link between physical activity and the built environment. However, they found that the current built environment may not promote healthy lifestyles with many urban environments lacking safe open spaces to encourage physical activity. The built/physical environment can be contemporary, traditional, automotive or pedestrian orientated depending on the purpose of its construction (Ewing and Cervero, 2001). Sallis et al. (1998) in turn suggested that the physical environment can be natural or constructed with both offering barriers to physical activity. They further described natural constraints as being climatic and geographic and poor design characteristics as being constructed constraints (Sallis et al., 1998). At present the current generation of urban planners may face new environmental challenges in terms of building a physical environment which can broaden health and physical activity behaviours (Jackson, 2003) as the perceptions of the built environment can be associated with activity levels within local communities (Timperio et al., 2004).

There appears to be many environmental characteristics ranging from aesthetical, visual, sensual, accessibility, proximity and convenience, climatic and safety which may be termed logical categories necessary to encourage people to participate in physical activities. The built environment may also be considered to be contemporary, traditional, automotive, pedestrian, constructed and/or natural depending on whether the environment was changed by humans or left untouched. These characteristics can include the setting in which an activity can occur, the facilities within this setting and the overall programmes available all of which can either support or inhibit physical activity. Currently the built environment may not promote healthy lifestyles due to the lack of available spaces to encourage activity. Therefore, planners may need to logically assess and design facilities which take account of the natural environment to consider climatic and geographic and the design concerns for the constructed environment. However, there are many locations which can be conducive for adolescent and adult participation in physical activity. These will be explored now.

2.10 Locations for Physical Activity

Very little is known about physical activity at the building or site level (TRB, 2005) however, generally there may be a number of locations which may be considered conducive for people to engage in physical activity. These include schools, the workplace, parks and public open spaces, recreation/leisure centres and neighbourhoods although these sites may differ in terms of their size and accessibility (Sallis et al., 1998; Brownson et al., 2001; Gauvin et al., 2005). Golf courses, swimming pools, tennis courts, beaches, the river plus fitness and sports centres can also be added to the list of locations for physical activity (Giles-Corti and Donovan, 2002). Indeed the location for physical activity may have a huge impact on the potential for adolescents to participate in physical activities, as it was found that the main barrier to adolescent participation was the lack of a suitable location (de Róiste and Dinneen, 2005). In their Australian survey, Timperio et al. (2004) found that the most common destination walked or cycled to was firstly the school, followed by parks, oval (for cricket and/or Australian Rules Football), playgrounds, shops and to friend's homes. Indeed the importance of providing playing pitches was noted in a report published by Sport England:

“Playing fields are one of the most important resources for sport in England. They provide the space which is required for the playing of team sports on outdoor pitches. Yet as open land, particularly in urban areas, becomes an increasingly scarce resource, they often seem to offer a tempting opportunity for other forms of development” (Sport England, 2008, p. 1).

This document also listed the array of sports which playing pitches can cater for which included soccer, American football, rugby, cricket, hockey, lacrosse, rounders, baseball, softball, Australian football, Gaelic football and hurling, shinty and polo (Sport England, 2008). Therefore, the provision of playing pitches can be seen as a necessary resource due in part to the many sports which playing pitches can cater for in an outdoor setting. In line with this outdoor setting, location patterns for boys and girls differ with boys spending more time outdoors than girls (Department of Health and Children, 2007). The resources which are available on a site may influence and/or restrict the choice of physical activities available to individuals and may require numerous facilities to aid a multitude of physical activities (Cohen et al. 2006; McCormack et al., 2006).

McCormack et al. (2006) found that use of physical activity facilities may be associated with proximity to the destination but also noted that people may be willing to travel to locations outside of their local area if the location can offer attractive qualities to the person, such as with beaches and river walks. Because the distribution of facilities may be likely to vary across sites, researchers may need to examine locations in terms of focusing on the quality of facilities as well as accessibility and proximity (Sallis and Glanz, 2006). Indeed the importance of proximity was noted in a study which suggested that those living within 10 minutes of a suitable location may be more likely to be physically active thus more likely to meet recommended levels of physical activity (Powell et al., 2003). Although it may be reasonable to suggest that the existence of a facility such as a park near home may increase exposure to physical activity, this may not necessarily be the case (Cohen et al., 2006).

Giles-Corti et al. (2005) suggests that simply providing a public open space within close proximity to a community may prove to be insufficient in increasing physical activities. For example, a public open space (park) may be adequate in introducing an activity (free

kicks in soccer) to a person but if that person wishes to pursue the activity properly they may need to use a proper soccer pitch with goal posts. However, those who participate in vigorous physical activity generally travel further distances to use facilities than those engaging in non-vigorous exercises (McCormack et al., 2006). Spatial opportunities and purpose of travelling may influence the distance travelled to recreational/physical activity destinations (McCormack et al., 2006). For instance, someone dedicated to participation in mountain biking may be more likely to travel to a mountainous area not close to their home than someone not fully dedicated to the activity. Although not all facilities can be located close to residential areas, some locations such as schools and public amenities may need to be located within a relative easy walking distance of people to encourage active living (Glaeser and Kahn, 2003). Powell et al. (2006) found that the lack of available sites for physical activity may support the lower levels of activity observed amongst the population, in particular, those for minority backgrounds and those of lower socioeconomic status. Disadvantaged areas may be generally located further from beaches and rivers and offer barriers to the poorer people in society in terms of transportational costs, distance to sites, and the time involved in getting to sites (McCormack et al., 2006).

In general there may be an array of locations suitable for physical activity but these locations can differ in terms of their size and ability to cater for large or small numbers of people. These can be educational facilities, work sites, local neighbourhoods and local amenities – parks, public open spaces, beaches, golf courses and tennis courts. The importance of playing pitches should not be overlooked due to the array of differing sports and activities that can be catered for on playing pitches. Lack of a suitable location for an activity coupled with the proximity of the location – far from homes, has been reported to be a major constraint of adolescent participation in physical activity. Therefore, suggesting that if the location exists close to one's home, then the person may be more likely to participate in physical activity. On the other hand, the design of communities can also encourage participation in physical activity. For example, provision of adequate footpaths can allow people of all ages to become physically active through walking. This will be observed now.

2.11 Community Design

The rise of suburbs appears to have begun during the nineteenth and twentieth centuries due to transportational advances such as commuter trains and road networks (Frumkin, 2002). However, post 1945 suburban environments may have resulted in increased travel distances to and from destinations (McCormack et al., 2006). This appears to have been caused by increases in unplanned suburban growth; residential housing and buildings, resulting in congestion, pollution and reduction in open spaces, playgrounds, footpaths and cycle lanes for activities (Kahn, 2001). These factors merge to take the form of urban disorder, thus urban sprawl (Ewing et al., 2003) which has similar defining factors to modern community design (Glaeser and Kahn, 2003; Jackson, 2003). In turn modern community design with urban sprawl may have created an environment which may have had a negative effect on social capital and health (Frumkin, 2002). In Ireland there has been a dramatic increase in the demand for housing driven by factors such as population increases, the rise of the Irish economy, increases in the number of people in gainful employment leading to greater disposable income and lower mortgage rates (Kenny, 1999; Department of the Environment, Heritage and Local Government, 2006a). Although the demand for housing can be expected to gradually reduce in Ireland in the forth coming years, it was estimated that approximately 600,000 homes would be built over the next 9 to 10 years (Department of the Environment, Heritage and Local Government, 2007b). However, with economic fortunes changing in Ireland in the past year, these targets are unlikely to be met.

Sallis and Glanz (2006) suggest that before the middle of the twentieth century, community design acted as a support to convenient pedestrian travel such as going to school or shopping. The way in which buildings and residential housing are constructed and located may be regulated by complex government laws however; many urban and suburban environments may not be designed adequately to facilitate healthy behaviours (Collins Perdue et al., 2003). The origin of local communities may be important for physical activity habits and opportunities as older suburbs may be more likely to have footpaths conducive for activities such as walking (TRB, 2005). Older urban areas may be more advantageous for physical activities such as walking and cycling due to the likelihood of these traditional areas having footpaths, denser interconnected streets, and a mix of

residential uses (Ewing et al., 2003; Sallis and Glanz, 2006) thus supporting social networking. Older traditional communities or settlements may be more likely to contain a balanced mixture of dwellings (Katz, 1994) within a walkable distance from each other. For example, residential housing may occupy the focal point with supporting dwellings situated nearby – figure 2.1.

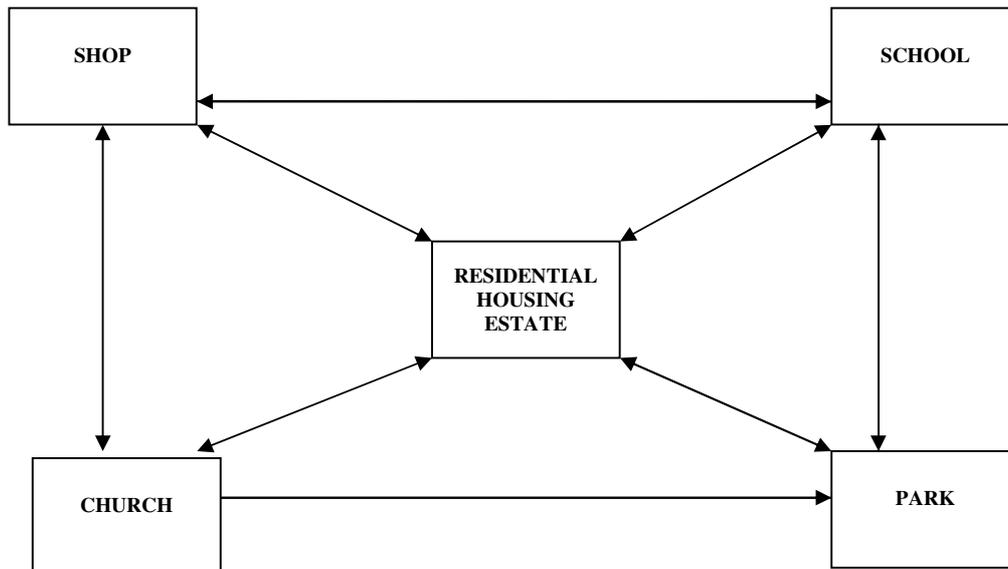


Figure 2.1 Traditional Community

People may walk and/or cycle as a means of active transportation if they live in traditional communities which appear to cater for these activities more easily than modern designed communities (Sallis et al., 2002). Leyden (2003) claimed that modern suburbs do little to enhance social interaction and found that properly designed environments can support the establishment of elements of social capital - interaction, social inclusion and reciprocity, within a community. In line with this it is proposed that modern housing schemes need to allow pedestrians and cyclists to move with ease and in safety as well as reducing where possible the necessity to travel by motor car to employment, education and recreation (Department of the Environment, Heritage and Local Government, 2007b). Frumkin (2002) supported the importance of environments in establishing social interaction and added that poorly designed environments can have a negative effect on social capital and mental health. He further suggested that the inability of people to remain in one community throughout their life may undermine community cohesiveness (Frumkin, 2002).

Creating a supportive environment for health may not be a new trend. There appears to have been a growing recognition over the past decade about the significance of appropriate environments in promoting and contributing to health behaviours and well-being of all people, both young and old (Mullan, 2003; Ball et al., 2006). Therefore, it may be important to adequately design and construct neighbourhoods to promote social capital, mental and physical health and to include footpaths and enjoyable scenery to encourage physical activity (Brownson et al., 2001).

Handy et al. (2002) define urban design as the plans of cities and the physical elements in order to allow for the arrangement and the appearance of infrastructures - roads, footpaths, bridges, rail tracks and public open spaces, while also concerned with the function and appeal of public spaces. Urban and community design in turn can affect peoples' physical activity patterns (Sallis and Glanz, 2006). Although Norman et al. (2005) found limited evidence to suggest that community design and access to recreational facilities may be associated with moderate to vigorous physical activity in adolescents. However, private developers may be ultimately responsible for the development and construction of local residents and commercial facilities which in turn may impact physical activity patterns either positively or negatively (TRB, 2005). It remains unclear the extent to which physical inactivity has occurred as a result of design and subsequent construction of communities (Sallis et al., 2002). Yet, research has shown that the design of the community environment is important in promoting leisure time physical activity and can have significant, positive and/or negative, influences on health and health-related behaviours (CDC, 2001; Ewing et al. 2003). Further research has indicated that adequate public open space within the community containing good access to amenities may be an important community resource associated with higher levels of physical activity, particularly walking (Giles-Corti et al., 2005).

The way in which neighbourhoods are designed can determine the availability of outdoor activity and further decide whether children/adolescents can use the neighbourhood for activities (Powell, 2005). For example, the construction of adequate footpaths may influence whether or not a child/adolescent walks to school. A report published by the

Department of the Environment, Heritage and Local Government (2007b) recommends that successful communities require a range of services ranging from commercial, educational, health, religious and civic uses through mediums such as playing fields, parks, Churches, schools, shops, community meeting places and recreation and leisure facilities. Neighbourhoods where people live can be associated with physical activity on one hand or on the other hand the prevalence of weight problems due to an inadequate design which does not support physical activities (Saelens et al., 2003). A point Posner et al. (2002) observed when noting that children questioned in their study reported using roads and footpaths regularly as play areas. Nonetheless, facilities can vary in communities as a result of race, ethnicity and socioeconomic characteristics (Powell et al., 2006).

The quality of the physical environment may be important in encouraging people to be physically active rather than their socioeconomic status (Giles-Corti and Donovan, 2002). Factors such as adequate street lighting, trustful neighbours and a pleasant neighbourhood, availability of recreational facilities, parks, walking and cycling trails, swimming pools, waterways, playgrounds, and sports fields may act as supports which may be likely to encourage people to be physically active within their particular neighbourhood (Brownson et al., 2001; Addy et al., 2004). These attributes may be referred to as being convenient localised facilities within communities which can encourage people to be physically active (Ball et al., 2001). By improving the design of public open spaces to create large and attractive facilities, it may encourage multiple users such as walkers and other sports participants to use facilities (Giles-Corti et al., 2005). A benefit to the creation of public facilities can be societal. For example, Leyden (2003) found that residents living in walkable, mixed-use neighbourhoods may be more likely to know their neighbours.

Ball et al. (2006) recommend examining the environment specific to the need of the individual. For example, by examining the environment in the context of what facility or site is available within a four hundred meter radius of an individual's home. People may be less likely to participate in activities such as walking and cycling, if there are no suitable paths within five minutes of their homes (Giles-Corti et al., 2003b). This in turn may influence physical activity and inactivity patterns and the likelihood of the individual being

fit and healthy or unfit and unhealthy leading to health/weight problems. Satisfactory land use can influence travel by affecting the degree of proximity and connectivity between the starting and end point of journeys (Frank, 2000). For instance, should two people wish to meet for a walk, the location of a park may allow both to meet on route thus, the park may hold the roles of facility for an activity, a location for social interaction within close proximity of the individuals' homes and influence the distance they decide to walk. This point was supported by Powell (2005) who claimed that the design of homes and work sites can affect how physically active people can be in terms of distance they walk.

To support the benefits of the community in physical activity participation, support policies to increase levels of land use, community design and street connectivity may be used and may ultimately be associated with positive levels of physical activity (Frank et al., 2005). Although Norman et al. (2005) and Lee and Vernez Moudon (2006) found that living in hilly or mountainous areas may discourage adolescents, particularly girls, from participating in outdoor activities such as walking and cycling. Perhaps by creating footpaths in an attractive and conducive environment for physical activity, this may lead to increases in walking and other forms of vigorous physical activity from people within the community (Giles-Corti and Donovan, 2002). And by improving availability, this may be considered the first step in ensuring accessibility of localised community environment facilities (Powell et al., 2006).

Communities began as a means to allow people to withdraw from urban life within commuting distance of work. However, due to increased urban growth, this has resulted in a series of problems, namely traffic congestion, water and air pollution and a severe reduction in spaces for physical activity which resemble urban sprawl. Consequently some communities have been located further from sites of work. This has placed an importance on urban and suburban environments to be adequately designed to support and facilitate healthy behaviours. In Ireland increases in population and general wealth led to an increase in the demand for housing prior to 2008. Although this trend has slowed presently and is further expected to diminish in the next few years, there has still been substantial demand for land for residential development during the past ten years. Older/traditional

communities appear to have been more suitably designed to support physical activity with provision for footpaths and access to a range of mix land uses – schools, Churches, shops and local street access, which can be accessed by foot. In contrast, modern communities appear to do little to support social interaction and may need to be designed to allow people movement and social interaction while reducing motorised travel. It may be difficult to assess whether adequate community design can actually support physical activities. But nonetheless it may be plausible to suggest that should the appropriate environment exist within a local community – footpaths, playing areas, adequate lighting for activities, pitches, schools, Churches, green areas and/or parks all within close proximity of each other, residents may be more likely to support positive health behaviours and physical activities. However, the design of local communities to include these characteristics may depend on factors such as socio-economic status, race and ethnicity of the residents. The next section will look at public open space and its value to the community.

2.12 Public Open Space

Open space or green space may be defined as a main factor to why urban and suburban residents moving to ‘rural’ communities located just beyond metropolitan fringes which can serve as commuter towns (Irwin and Bockstael, 2001; Barbosa et al., 2007). These can contain scenic areas, opportunities for recreational activities and be free of traffic congestion and pollution. Public open space can vary in scale and function and include nature reserves, woodlands, parks, squares, courtyards, playgrounds, communal areas, semi-private spaces and private gardens (Department of the Environment, Heritage and Local Government, 2007c). In the UK public open space has been divided into three categories:

1. Children’s play space – which are small areas equipped with play items such as swings and slides;
2. Informal or Incidental open space – which are areas small in size or irregular in shape unsuitable for formal games but contribute to the character of the overall attractiveness of the area;

3. Major or formal open space – areas consisting mainly of grass suitable for games and general recreation located easily in developments away from adjacent dwellings.

(East Cambridgeshire District Council, 1998).

Wu and Plantinga (2003) found widespread public support for public open space to limit the cause of urban sprawl which can result in road congestion, a population widely dispersed in low-density residential developments and a lack of distinct activity areas such as functional open space (Ewing, 1997; Glaeser and Kahn, 2003; Ewing et al., 2003). Further consequences may include large-scale absorption of open space, pollution, shortages of affordable housing close to employment locations and generally a poor quality of life for communities (Downs, 1999; Transit Cooperative Research Program (TCRP), 2000; Wassmer, 2002). Variety may be a key component in open space provision with considerations made in terms of the quality of the design, function, distance boundaries, management and maintenance which may aid to maximise the facilities by users (Department of the Environment, Heritage and Local Government, 2007c). Access to attractive public open spaces may be linked with elevated levels of walking. However, in order to encourage walking and other physical activities there may be a need to appropriately design public open spaces to create large attractive areas to encourage physical activity use by multiple users (Giles-Corti et al., 2005).

Public open space may be considered a key element in defining the quality of residential areas as it may provide passive and active locations as well as assisting health benefits, aesthetical, cultural, social, ecological and environmental systems (Department of the Environment, Heritage and Local Government, 1999; Maas et al., 2006; Barbosa et al., 2007; Tyrväinen et al., 2007). According to Ward Thompson (2002) and Maas et al. (2006) children, secondary educated people, older adults, special needs and the unemployed have the greatest need for access to public open space to support their social needs in a safe outdoor setting. Supporting this access to public open space may provide social benefits through community integration in a way private gardens cannot (Barbosa et al., 2007). Public open space or parks provided by local authorities may be important in providing

facilities and amenities such as playing areas – pitches and fields, tennis and basketball courts, pitch and putt and golf courses, all of which can benefit the wider community including young people (Department of Health and Children, 2007c). Urban open spaces are necessary to provide all people the opportunity to meet and be a place where one can transcend the crowd and be anonymous or alone or have that opportunity to socialise if he/she wishes (Ward Thompson, 2002).

The Irish government published a document titled; Residential Density: Guidelines for Planning Authorities, which specifies recommendations for public open space in housing developments and states that Greenfield areas or public open space:

“... should be provided at a minimum rate of 15% of the total site area. This allocation should be in the form of useful open spaces within residential developments and, where appropriate, larger neighbourhood parks to serve the wider community. In all other cases, public open space should be provided at a minimum rate of 10% of the total site area” (Department of the Environment, Heritage and Local Government, 1999, p. 20).

Departmental recommendations can also be represented as a requirement per person – 15 to 20 metres squared per person; however, this means of assessment can be difficult to calculate due to unpredictable occupancy rates in apartment buildings and larger houses (Department of the Environment, Heritage and Local Government, 1999). Therefore, public open space provision based on population has been deemed inappropriate with percentage of the overall site a more suitable measure. The document further offers guidelines for larger sites characterised by large, private or institutional buildings set in a sizeable area, which may be accessible to the wider community, and sets the recommendation to the standards set out for Greenfields or 20 per cent of the total site area or whichever is greater (Department of the Environment, Heritage and Local Government, 1999). The purpose of this document is intended to guide local authorities in public open space provision, which is a compulsory directive, in modern housing estates when developers construct housing projects.

The burden of responsibility is therefore placed on planners who may need to preserve open/green spaces in future years and place a greater emphasis on the quality of open space being provided for within planning applications (Department of the Environment, Heritage

and Local Government, 1999; Tyrväinen et al., 2007). Therefore, specific plans may need to be drafted offering functional specific space, safety with ease of access for all (Ward Thompson, 2002). However, there may also be a danger of open spaces being consumed by expanding urban areas into the countryside, especially if the open space is located close to urban sites (Wu and Plantinga, 2003). In order to preserve and maintain open spaces, local authorities may need financial contributions from the general public to ensure that the provision of adequate measures are in place to avoid over-development and to assist the authority in their assessment of planning applications (Department of the Environment, Heritage and Local Government, 1999).

Other considerations may be to locate open spaces near neighbourhood centres, be located facing south or west to benefit sunlight and to ensure the facility has a clear function, character and shape (Department of the Environment, Heritage and Local Government, 2007c). However, prior to the commencement of developments local authorities may need to put into place a policy to ensure developers provide adequate and predetermined public open spaces. Departmental guidelines require developers to meet with local authority officials prior to the commencement of the development, in which a preplanning meeting would occur where they (developer) must outline their plan (Department of the Environment, Heritage and Local Government, 2008). With regard to open space provision, in Scotland for example, developers are required to agree the extent and nature of open space provision with the local authority before planning permission has been granted or any house has been occupied (Kit Campbell Associates, 2001).

The availability of open space may be a factor in encouraging people to move beyond metropolitan areas and can also be a source for a variety of physical activities. However, in order to facilitate physical activity, it may be essential to consider characteristics such as design, access, function and management to maximise the potential of the open space for a large number of possible users. As well as providing a resource for physical activities, open spaces may also assist health, social, cultural and environmental structures and may be of particular benefit to children, older adults, special needs and the unemployed. The Irish government recognised the importance of providing open space, recommending that

modern housing estates must have at a minimum, an area accumulating 15 per cent of the total estate to be allocated for open space to serve the community. Due to past mistakes with regard to unplanned land use in terms of not providing adequate facilities of green spaces and the occurrence of urban sprawl, there may be an emphasis on planners to provide open spaces in future developments to offer functional space at little or no cost to users. This section has examined the built environment, locations for physical activity, community design, and public open space. The next section will look at the operations of local authorities.

2.13 Operations of Local Government

Local authorities have a general ability to get involved in any activity which may add to the betterment of the community (Callanan and Keogan, 2003) but in the main the operations of local authority provision can be broken into eight programme groups:

1. Housing and Building – enforcement of housing standards and controls;
2. Road Transportation and Safety – road upkeep, public lighting and traffic management;
3. Water Supply and Sewage – construction, maintenance and supply of public water and sewage schemes;
4. Development Incentives and Controls – planning policy, control of new development and buildings, promotion of industry and other developments;
5. Environmental Protection – refuse collection and disposal, street cleaning and pollution control;
6. Recreation and Amenity – swimming pools, parks, libraries, open spaces, recreational facilities, art galleries, museums and theatres;
7. Agriculture, Education, Health and Welfare – appointments to vocational educational committees, regional health boards and administration of higher education grants;
8. Miscellaneous Services – rate collection, elections, courthouses, consumer protection measures, corporate estate and malicious injuries.

(Dooney and O'Toole, 1998; Callanan and Keogan, 2003).

Roche (1982) noted that during the early 1980's local authorities appeared to be concerned with the development of the physical environment, in particular housing, which may be considered to be the only major social service remaining with local government. Included within housing is zoning which may potentially be a chief modern function of local authorities in deciding what and where buildings can be constructed. While recreation and amenity services fall within the control of local authorities, this area appears to have been overshadowed by other programmes – housing, road construction, water and sewerage, which had taken priority claiming most of the limited resources available to local authorities (Callanan and Keogan, 2003). Although local authorities are responsible for many essential local services, the range of responsibilities allocated by the central government can be restrictive in comparison to other countries. For example, local authorities in other countries in Europe provide many more functions than their Irish counterparts (Collins, 1994). Areas such as policing, public transport, health and education fall under the control of local authorities in Europe (Department of the Environment and Local Government, 1996). Therefore, potentially placing local authorities in Ireland in a weakened position to respond to local issues and problems such as drug abuse/trafficking causing communities to request central government assistance, in essence removing local control.

Over the years, local authorities have had powers awarded to them for the provision and operation of parks, play grounds and recreational areas zoned by the authority, often operated in conjunction with local clubs and organisations (Callanan and Keogan, 2003). The Local Government Act 2001, (Section 66) permits local authorities to provide facilities for recreation and amenity which traditionally local authorities have provided in the form of swimming pools, open space and town parks (Callanan and Keogan, 2003). But rising financial costs have given way to private sector involvement in recreation provision. In accordance with the Local Government Act 1994, local authorities can also acquire land by agreement or by compulsory order for recreational facilities (Callanan and Keogan, 2003). Generally the provision of recreational facilities locally operates on a partnership basis between local authorities, local communities and local clubs in order to manage and protect facilities.

Local authorities are responsible for an array of services such as housing, transportation, water and sewage, development incentives, environment protection, recreation and amenity, agriculture, education, health and miscellaneous services. However, currently housing appears to be the only major service remaining under local authority influence with services such as recreation and amenity fading in the hierarchy in terms of priority and funding. Local authorities do have a function to provide parks, playgrounds and recreational areas which has often been provided in the guise of swimming pools, town parks and open spaces. However, rising financial costs have allowed privateers to become involved in recreation provision. A potential weakness of local authorities in Ireland when compared to European countries may be their reliance on the central government, particularly in regard to policing matters and funding – income and expenses. The next section will look at the finances of local authorities.

2.13.1 Finances of Local Authorities

Current expenses of local authorities are offset by income generated through current (revenue expenditure) and capital expenditure. Current expenditure is financed from rates, government grants, commercial rates from property, water and waste disposal charges, goods and services and general purpose grants (Callanan and Keogan, 2003; Department of the Environment, Heritage and Local Government, 2007a). Current expenditure is usually recurring and is the basis of the annual budget. Capital expenditure on the other hand is financed by capital grants and borrowings. Capital expenditure is acquired on the creation of an asset, for example, housing, sewerage schemes and/or roads. The abolition of rates on domestic property in 1977 severely restricted the power of local authorities in Ireland and resulted in local authority dependency on central government (Dooney and O’Toole, 1998). The Local Government Fund which is comprised by the proceeds of motor tax, driver licence revenues and an Exchequer contribution provides local authorities with another source of revenue (Department of the Environment and Local Government, 2000).

Total Local Authority expenditure in 2007 amounted to €4.7 billion with over €404 million allocated to programme group six – Recreation and Amenity (Department of the

Environment, Heritage and Local Government, 2007a). A further breakdown of this figure shows where the funding was allocated:

- Swimming pools - €22,817,010;
- Libraries - €128,349,128;
- Parks, Open Spaces, Recreation Centres - €130,951,979;
- Other Recreation and Amenity - €78,940,095;
- Administration and Miscellaneous - €48,425,337.

(Department of the Environment, Heritage and Local Government, 2007a).

However, with current and capital revenue expected to fall in light of the deceleration of the Irish economy, this may affect local authorities and the funding available for recreation and amenity which was found in Scotland (Kit Campbell Associates, 2001). The Department of Arts, Sports and Tourism through the National Lottery provide a programme of funding to local authorities for sport and amenity called the Sports Capital Programme. This programme allocates funding to local clubs for facilities, programmes and equipment with County Tipperary receiving over €3 million, County Waterford €1.5 million and County Cork €4.5 million in 2008 (Department of Arts, Sports and Tourism, 2008). In total 37 bodies in County Tipperary received funding from Sports Capital Grants, with 5 of these in Thurles to the sum of €927,000. However, occasionally disparities can occur in the allocation of funding, for example, in 2008 North Tipperary received over €2.5 million to South Tipperary's €385,000 (Tipperary Star, 2008).

Funding is also available to Town and County Councils from a Development Levy which is a charge imposed on developers in which local authorities:

“... must draw up a development contribution scheme in respect of public infrastructure and facilities provided by, or on behalf of the local authority that benefits development in the area” (Department of the Environment, Heritage and Local Government, 2003, p. 1).

This levy was created to allow the wider community to share in the prosperity created by planning decisions by taking account of the potential increase in land value and follows similar practices in the United Kingdom, New Zealand and Australia (Department of the Environment, Heritage and Local Government, 2007d). The charge relates to the size of the property being developed; the bigger the development, the larger the charge. Local

authorities use this source of revenue for specific projects and only for specific projects. For instance, revenue accumulated for community recreation can only be used for this purpose and can not be re-directed to other services. These sources of funding can be also referred to as capital or revenue funding. Capital funding provides for fixed assets (pitches and equipment), whereas revenue funding refers to the money needed to maintain these assets and the payment of wages. In turn the main resource of capital funding locally in Ireland since 2002 has been the Development Contribution Scheme. However, some major capital funding may require central government aid. For example, the Department of Arts, Sports and Tourism provide grants for swimming pools and Fáilte Ireland provide aid for projects benefiting recreation.

Local authorities meet expenses through grants; government and general purpose, commercial rates and goods and services, officially termed current (revenue) and capital expenditure. These sources of finance in combination with the Local Government Fund provide local authorities with their main source of revenue. Total local authority expenditure in 2007 totalled over €4.7 billion with over €400 million being allocated to recreation and amenity. Further funding is available to local authorities through Sports Capital Programme which has allocated €9 million between counties Tipperary, Waterford and Cork. Development levies also finance local authority services. The next section will briefly highlight the methods used to monitor what is being provided by local authorities.

2.13.2 Monitoring Service Provision

Under the Local Government Act 2001 local authorities can take measures to engage in activities to promote the interests of the local community (Local Government, 2001, section 67). Activities incorporated within this Act include general recreational and leisure activities, sports, games and related amenities and facilities. However, the way in which local authorities provide and allocate services cannot therefore be left unchecked. The Department of the Environment, Heritage and Local Government detailed the manner in which local authorities will be monitored with regard to the services they provide in an initial document titled Better Local Government – A Programme for Change. Within this

document it was stated that local authorities would assume quality initiatives to improve services through the use of:

- A quality awards scheme to encourage local authority work;
- Performance indicators will be used to measure and compare local authority activities in the delivery of key services and a special working group will be established to identify the key standards and indicators;
- High-level project teams will be established to develop proposals for one stop shop centres covering a wide range of public services to be implemented on a pilot basis;
- A comprehensive list of public rights to information from local authorities will be published;
- The general public will be given a legal right to attend council meetings.

(Department of the Environment, Heritage and Local Government, 1996, p.4).

Of particular relevance is the use of performance indicators to monitor and measure how well local authorities are performing with regard to service delivery. However, performance indicators can only give a “general overview of a service and do not on their own give a complete view of local authorities’ performances” (Department of the Environment, Heritage and Local Government, 2009, p. 251). Initially twenty-one service indicators were introduced in 2000, this was broadened to forty-two in 2004 which are intended to raise questions and provoke a response rather than to provide answers (Local Government Management Services Board, 2008). Nonetheless these performance indicators seek to provide a balanced view of performance over a period of time. Local authorities must now measure their performance against set indicators and publish how they did in their annual reports (The Department of the Environment, Heritage and Local Government, 2000). This will allow elected officials and the public to judge their councils’ performance. Broadly, performance indicators for recreation and amenity can relate to the number of swimming pools provided by local authorities, the number of people using swimming pools, the number of parks and the number of people using these parks (The Department of the Environment, Heritage and Local Government, 2004a). For example, performance indicators will highlight the amount of swimming pools currently in operation

and will attempt to improve these numbers and thus increase the number of people using swimming pools.

In addition to performance indicators an Interdepartmental Task Force has been established through the Department of the Environment, Heritage and Local Government. This body oversees the activities of the County/City Development Boards (CDB) which has a responsibility to monitor local authority service provision (Fitzpatrick, 2002). The CDB was established in 2000 to ensure a synchronised delivery of public services locally. Auditing service provision of local authorities may prove to be a difficult task which in turn can impact the identification of service gaps. However, these are “key requirements in the CDB local service integration model” (Fitzpatrick, 2002, p. 79). The results of performance indicators are gathered by the Local Government Management Service Board and the Local Government Computer Services Board, audited by an Independent Assessment Panel and presented to the Minister for the Environment Heritage and Local Government annually (Local Government Management Services Board, 2008).

Monitoring local authority performance is achieved through the use of a quality awards scheme, project team analysis, published public documents and through the use of performance indicators. However, although useful, performance indicators can only act as a monitoring instrument seeking to provide a balanced view of service provision. In general performance indicators can be used to evaluate whether or not resources should be diverted elsewhere in order to meet public demand. Independent and government bodies are also involved in the monitoring process with the results published yearly. Local authorities, Town Councils, publish their results in their Development Plans. These detailed manuscripts show how a local authority provides services and allocates funding. Development plans will now be discussed in the next section.

2.13.3 Development Plans

Local authorities' have a statutory obligation to produce a detailed document featuring the authority's perceived limitations and strategic approach, future objectives and policy in relation to the provision of services such as:

- Housing and Zoning policy – social and affordable housing, traveller accommodation, housing for disabled and elderly and energy efficient housing;
- Industry and Employment policy;
- Retail policy;
- Social Integration;
- Arts and Culture;
- Tourism;
- Education, Cultural and Community Facilities policies – schools, higher education, community facilities, health care and nursing homes;
- Public Utilities policies – water, sewerage, pollution, litter control, waste disposal, electricity and telecommunication;
- Transportation policy – traffic, parking, cycle ways and pedestrian routes;
- Environment policy;
- Town Centre policies;
- Urban Renewal;
- Environment and Conservation policies – architectural conservation, buildings and structures, trees and hedgerows and protected landscapes;
- Open space, Recreation and Amenity policies – recreation facilities and playground provision.

(Thurles Town Council, 2002; Dungarvan Town Council, 2006; Youghal Town Council, 2009).

Worthington and Dollery (2000) noted how traditionally planning strategies by local governments has been associated with the formation of land use policies but this has shifted towards community related functions to create social capital within communities. In turn

planning strategies are contained in development plans. These comprehensive plans are produced every five to six years by Town and County Councils and usually contain detailed maps of each county and town covered. A colour coding system clearly outlines and differentiates residential areas, new residential areas, commercial development areas, areas of educational use, civic and community areas, mixed development areas, open space, agricultural areas and town boundary lines (Thurles Town Council, 2002; Dungarvan Town Council, 2006; Youghal Town Council, 2009). This colour coding system visibly shows the zoning policies of each County and/or Town Council in conjunction with the council's policy. For example, with regard to open space Thurles Town Council aims to protect and provide sports facilities, recreation, open space and appropriately related activity in Thurles (Thurles Town Council, 2002). Similarly Youghal and Dungarvan Town Councils have comparable aims and objectives with the three councils aiming to conserve and consolidate present areas and facilities while planning to develop new projects in the future. County and Town Council Development Plans refer to recreation and amenity, parks, open space and other ancillaries which may be connected to recreation, for example, footpaths and cycle lanes (Thurles Town Council, 2002; Dungarvan Town Council, 2006; Youghal Town Council, 2009). In Dungarvan it is expected that:

“pedestrian and cycle routes in existing streets will be implemented. Where possible, the Council will provide cycle ways between the outlying residential areas and the schools to encourage cycling as a safe and efficient mode of transport” (Dungarvan Town Council, 2006, p. 44).

Dungarvan, Thurles and Youghal all make reference to open space, zoning for open space, pedestrian and cycle access, parks and recreation in their respective Development Plans. Indeed in a step to forge a strong relationship with clubs in their borough, Thurles Town Council has set in place a programme in which it intends to:

“co-operate with sports clubs, schools and community organisations in the provision of sports and recreational facilities to serve the residents of Thurles” (Thurles Town Council, 2002, p. 25).

This has occurred by meeting with every club in the town individually to assess their current needs and to assess the future needs of each club. The aim of this programme was to protect the boundaries of the clubs and to ensure that land positioned adjacent to clubs in the town would not be zoned for residential or commercial developments in the future.

Therefore, should a club need to expand in the future, the adjacent land would be made available - zoned for recreation, for their use. The results of this programme will feature in the next Development Plan for Thurles in 2009.

The policies, strategies and objectives of local authorities, both County and Town Councils, are outlined in Development Plans covering a vast area of services from housing, employment, social integration, arts, tourism, transportation, education, the environment and recreation and amenity. Also outlined in this document are the councils' perceived weaknesses and limitations in the services they provide and the means by which each local authority expects to correct these weaknesses. County and Town Council Development Plans refer to recreation and amenity however, the extent of the actual provision may be questionable, with plans appearing to be an obligated guideline rather than an action policy document. Although local authorities do fulfil a provisional role, others also act as providers of physical activity locally – the voluntary sector.

2.14 Voluntary Providers

People with socioeconomic resource (education) and who are socially integrated appear to be more likely to volunteer their time for community good (Thoits and Hewitt, 2001). Typically sports volunteers are male, third level graduates, married with children and are in full-time employment (Doherty, 2005). A survey in the United States estimated that 56 per cent of the population volunteer annually (Brown, 1999). This compared to approximately 32 per cent of people in Europe who engage in voluntary work (Anheier and Salamon, 1999). In Ireland it has been estimated that for every four people:

“who play sport with enough regularity and effort to gain significant physical benefit, there are three who volunteer for sports, the vast majority of whom do so at least once per week”, (Delaney and Fahey, 2005, p. 71).

Of particular importance with regard to volunteerism in Ireland is the contribution of the Gaelic Athletic Association (GAA) which is the largest sports body in the country with over 4,700 clubs in all of Ireland (Delaney and Fahey, 2005) not including GAA clubs in Britain and the United States. The popularity of GAA based activities was also prevalent in the sporting patterns of Irish adolescents (Connor, 2003). Voluntary sports organisations

provide opportunities to participate and compete locally, regionally and nationally in a system of sports delivery that depends on volunteers to coach, officiate and administrate (Hoye and Cuskelly, 2003).

Apart from local authorities, voluntary organisations and people can aid the provision of physical activity to adolescents. Generally volunteers are educated, male and in full-time employment. In Ireland it has been estimated that one in every fourth person who plays sport volunteers their time in a sporting context at least once every week. Of particular importance is the role played by the GAA in providing clubs, pitches, games and people to manage and organise locally, regionally and nationally.

2.15 Conclusion

This section reviewed literature concerning physical activity, the built environment and providers, mainly local authorities. Firstly physical activity was examined which included definition, categories and benefits. Included with physical activity were the current trends amongst adolescents with regard to physical activity, physical activity in the school and concluded with barriers and recommendations for physical activity and active transport. Also examined was the built environment – where to go to be physically active, which included community design and public open space. The section also examined local authorities and included operations, finances, development plans and service indicators. Also included was a very brief look at voluntary providers. The next section will introduce the areas where the study commenced.

Chapter Three - Field Study

3.1 Introduction

This section will provide a brief description of each of the counties and towns featured in this study – Thurles, Co. Tipperary, Dungarvan, Co. Waterford and Youghal, Co. Cork.

3.2 Profile of County Tipperary and Thurles

Tipperary is the largest inland and third largest county in Ireland and is situated in the province of Munster in the south west of Ireland (Department of the Environment, Heritage and Local Government, 2007e). County Tipperary can be considered somewhat unique in that it is the only county in Ireland that has a border with eight other counties (from west to east – clockwise) Limerick, Clare, Galway, Offaly, Laois, Kilkenny, Waterford and Cork. The name Tipperary derives from the Irish Tibrad Ara meaning the spring of the territory of Ara (Bassett, 1991). County Tipperary can also be referred to as the Premier County, a term attributed to nationalist feeling in the county in which Thomas Davis is reported to have said ‘where Tipperary leads, Ireland follows’ (Marnane, 2003). Tipperary was divided into two administrative areas in 1838 to control lawlessness in the area with Tipperary North Riding and Tipperary South Riding originating (Murphy, 1994). Thus, the county falls into two regions – Mid-West and South East (Department of the Environment, Heritage and Local Government, 2006b). In 2000 the titles – North and South Ridings, were abolished and replaced with North Tipperary and South Tipperary respectively (Department of the Environment, Heritage and Local Government, 2007e). There are approximately 83,000 people in South Tipperary compared to 66,000 people in North Tipperary (CSO, 2007).

The main geographical features of Tipperary include uplands such as Silvermines, Ara, Slievefelim, Galtee, Galtymore, Knockmealdown, Slievenamon and Devil’s Bit and Keeper Hill (Marnane, 2003; North Tipperary County Council, 2003; South Tipperary County Council, 2003). The river Suir is the principal river in the county, originating in the Devil’s

Bit and flows into the Irish Sea in Waterford via Thurles, Cahir, Clonmel, and Carrick-on-Suir (North Tipperary County Council, 2003). The principal towns in County Tipperary in terms of urban population are Clonmel which has a populace of 15,482 people and is the largest town in County Tipperary and serves as the administrative centre for South Tipperary. Nenagh is the administrative centre for North Tipperary and has the largest population in North Tipperary with 7,415 people. Other major towns in County Tipperary are Thurles (6,831), Roscrea (4,910), and Templemore (2,255) all in North Tipperary, with Cahir (3,381), Cashel (2,413), Tipperary Town (4,415) and Carrick-On-Suir (5,856) situated in South Tipperary (CSO, 2007).

The name Thurles initiated from the Irish for stronghold, with Thurles or Dúrlas Éile referred to as the stronghold of Eliogarty or Ely (Flanagan and Flanagan, 1994). Thurles is situated in the valley of the river Suir which lies between the Silvermine Mountains and the Slieveardagh Mountains and is located in the southeast of North Tipperary (Thurles Town Council, 2002). Thurles is renowned for its association with Gaelic Games with the GAA having been founded there in 1884. Located in the heart of County Tipperary with an urban population of approximately 7,000, Thurles remains within close proximity of numerous major towns and cities. Thurles evolved as an active commercial urban town during the 1950s and 1960s with many heavy industries. While Thurles is a historical town, with its links going back to Norman times and beyond, it nonetheless has evolved into a thriving commercial, sporting and cultural centre. Thurles offers sports enthusiasts various choices of activities and has been termed ‘the home of hurling’ boasting one of Irelands’ finest facilities in Semple Stadium, which has hosted many major GAA events.

A recent audit conducted by the North Tipperary Sports Partnerships showed that Thurles had clubs catering for the following sports/physical activities – GAA, soccer, athletics, basketball, clay target shooting, equestrian, golf, walking, hockey, martial arts, rugby, squash, swimming, fishing, camogie, hunting, ladies football, table tennis and an active retirement club. Also featured in this audit was a list of facilities in the town, such as two leisure centres (one just constructed and run by the local council), five GAA pitches, athletics track (cross country only), three playgrounds, handball alley, golf course, hockey

pitches, equestrian centre, various indoor halls and soccer pitches (North Tipperary Sports Partnership, 2008). Incomes and expenditures of North Tipperary Council and Thurles Town Council for 2007 are illustrated below.

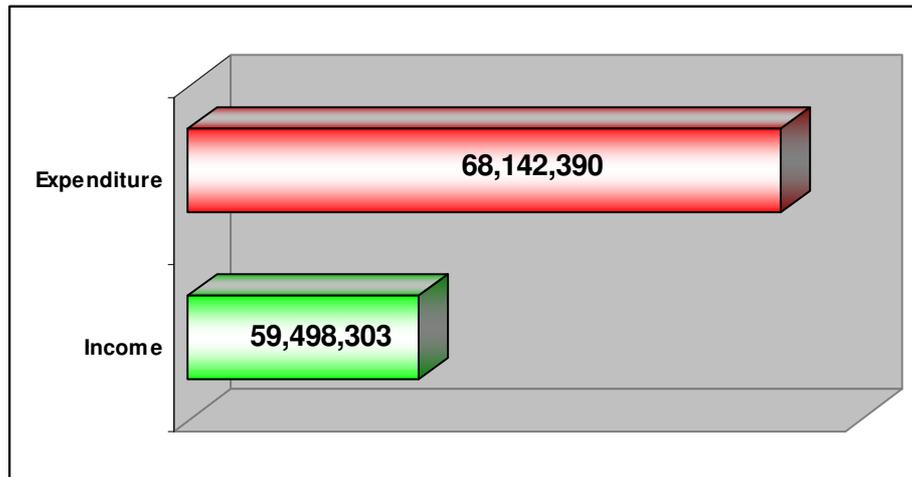


Figure 3.1 Income and Expenditure of North Tipperary County Council
(Department of the Environment, Heritage and Local Government, 2007a).

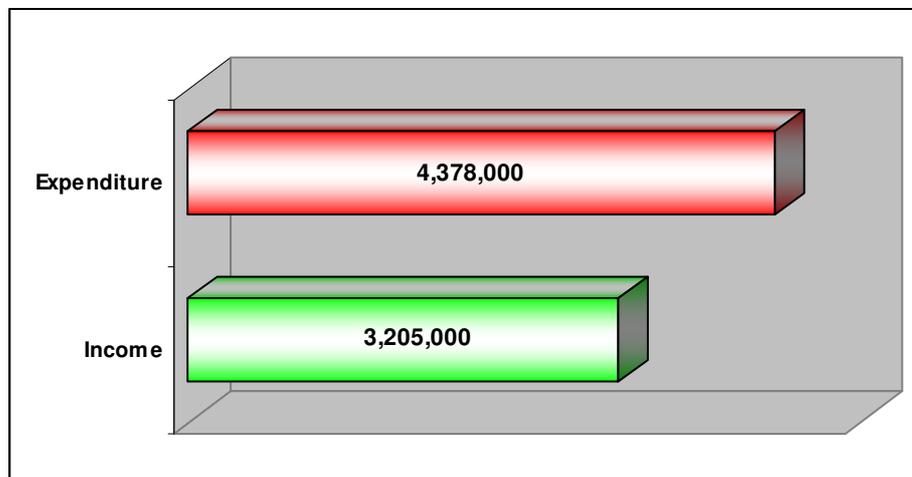


Figure 3.2 Income and Expenditure of Thurles Town Council
(Department of the Environment, Heritage and Local Government, 2007a).

There are currently nine elected councillors on Thurles Town Council. The following individuals are also employed by Thurles Town Council:

- Mr. Tom Barry – Town Manager and Director of Community and Enterprise;
- Mr. Michael Ryan – Town Clerk;
- Mr. John Ryan – Town Foreman;
- Mr. Ruairi Boland – Town Engineer.

Four schools were surveyed in Thurles and contained the following facilities:

- Christian Brothers Secondary School – All Boys’ School:
 - 2 Basketball courts;
 - Large School yard catering for soccer, GAA and other games;
 - 2 Handball alleys;
 - Playing pitch;
 - New Sports Hall.

- Presentation Convent Secondary School – All Girls’ School:
 - 2 All weather Hockey pitches;
 - 2 Basketball courts;
 - 2 Tennis courts;
 - New Sports Hall.

- Ursuline Convent Secondary School – All Girls’ School:
 - 2 All weather Hockey pitches;
 - 10 Tennis courts;
 - Playing pitch;
 - New Sports Hall.

- Gairm Scoil Mhuire – Mixed School:
 - Playing pitch;
 - New Sports Hall.

3.3 Profile of County Waterford and Dungarvan

County Waterford is the smallest county in Munster and is located on the south eastern coast of Ireland where it forms a border with four other counties – Cork, Tipperary, Kilkenny and Wexford (Moore, 1999; Department of the Environment, Heritage and Local Government, 2004b). Waterford in conjunction with counties Carlow, Kilkenny, Wexford, and South Tipperary comprise to form the South East Region of Ireland (Waterford County Council, 2005). The name Waterford is thought to have a Norse origin of Vaderfiord, which may have two possible meanings – ‘windy fjord’ and ‘fjord of the rams’ (Roesdahl, 1998). Waterford is also called the Decies/Deise after a tribe who settled in the area (Marnane, 2003). The principal geographic features of the county include the Knockmealdown, Comeragh and Monavullagh mountains and hills such as Sliabh gCua and Drum Fineen and four major rivers – Blackwater, Suir, Nore and the Barrow (Power, 1990). The county’s strategic location close to the Atlantic Ocean has supported invasion (Vikings and Normans) and subsequently the settlement of people who have lived in County Waterford for the past 7,000 years (Moore, 1999; Department of the Environment, Heritage and Local Government, 2004b). 107,961 people reside in County Waterford with Waterford City (45,748), Tramore (9,192), Dungarvan (7,813), Dunmore East (1,547) and Portlaw (1,495) defined as the major urban centres (CSO, 2007).

Dungarvan is the second largest town after Tramore, serving as the administrative centre for County Waterford and is situated approximately 28 miles from Waterford City (Waterford County Council, 2005). Dungarvan’s name originates from the Irish word for fort, in this instance Garbhán’s fort (Flanagan and Flanagan, 1994). Dungarvan along with Waterford City began as administrative centres during the Norman era, where Dungarvan developed into a port and market town (Department of the Environment, Heritage and Local Government, 2004b). At present, there are roughly 7,813 people inhabiting the urban confines of Dungarvan (CSO, 2007). Currently Dungarvan Town Council has secured the services of Strategic Leisure Limited who in conjunction with Waterford Sports Partnerships have conducted an audit of the clubs catering for sport/physical activities in the town. These include athletics, badminton, boxing, cycling, sea angling, numerous GAA clubs, three golf courses, handball, hockey, various martial arts clubs, pitch & putt, rugby,

sailing, soccer clubs, squash, tennis, hill walking and Special Olympics (Waterford Sports Partnership, 2008). County Waterford County Council and Dungarvan Town Councils' income and expenditure for 2007 are highlighted below.

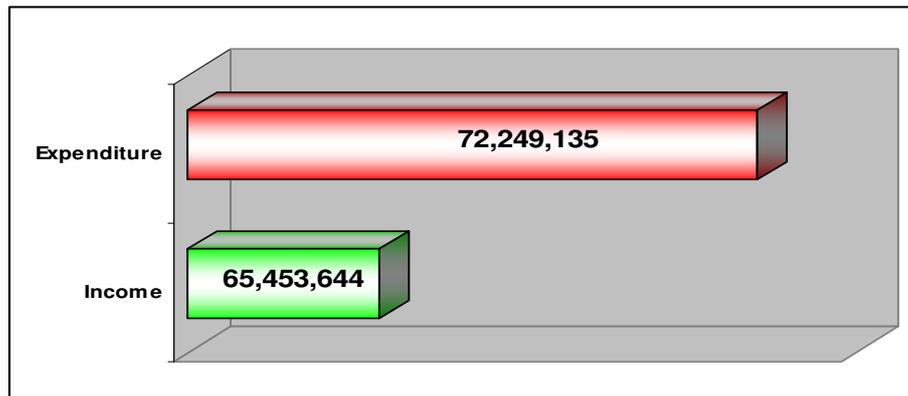


Figure 3.3 Income and Expenditure of Waterford County Council
(Department of the Environment, Heritage and Local Government, 2007a).

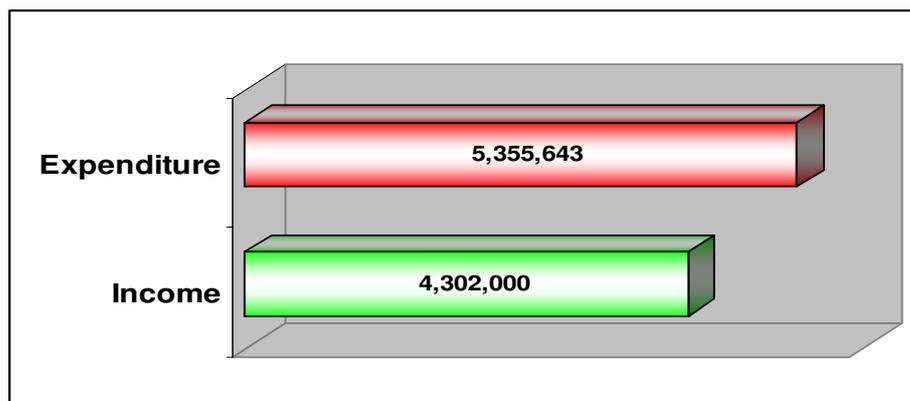


Figure 3.4 Income and Expenditure of Dungarvan Town Council
(Department of the Environment, Heritage and Local Government, 2007a).

There are currently nine elected councillors on Dungarvan Town Council and the following individuals are senior officials employed by Dungarvan Town Council:

- Mr. Denis McCarthy – Town Manager;
- Mr. Joe O'Flaherty – Town Clerk;
- Mr. Tom Rogers – Town Engineer.

Four schools were also surveyed in Dungarvan and contained the following facilities:

- Scoil na mBraithre – All Boys’ School:
 - Assembly hall (PE);
 - 2 playing pitches;
 - Facilities are limited in the school but activities are offered and take place outside school grounds – Sports Complex and local tennis club.

- Colaiste Chathail Naofe, Mixed School:
 - Sports hall;
 - All weather pitch.

- St. Augustine’s College – Mixed School:
 - 6 GAA pitches;
 - 1 Soccer pitch;
 - 1 All weather Hockey pitch;
 - All weather facilities for Long, Triple and High Jump;
 - Hammer, Discus and Shot Putt circles;
 - Sports Hall;
 - Indoor facilities for Pole Vault and High Jump;
 - 2 Squash courts;
 - 1 40 x 20 Handball alley;
 - 1 60 x 30 Handball alley;
 - Several outdoor Basketball courts.

- Ardscoil Na nDeise – All Girls’ School:
 - School Hall;
 - Facilities are limited on the school premises but activities are offered and take place outside school grounds – Sports Complex and local pitches.

3.4 Profile of County Cork and Youghal

County Cork is located on the south western coast of Ireland and is the biggest and most southerly county in Ireland where it borders counties Kerry, Limerick, Tipperary and Waterford (O’Flanagan and Buttimer, 1993). County Cork can be considered somewhat unique in Irish history in that it has experienced all phases of Irish development, from early native beginnings, the Norse and Norman invasions, English colonist expansion, staunch opposition to English rule and the subsequent Treaty (O’Flanagan and Buttimer, 1993; Foster, 2001). The name Cork derives from the Irish word ‘Corcach’ meaning the marsh/swamp possibly with reference to its location close to the River Lee (O’Flanagan and Buttimer, 1993; Flanagan and Flanagan, 1994). Cork is also called the Rebel County reputedly referring to a reputation for rebelliousness said to have originated back to the support of an English man in the 1491 War of the Roses and later the county’s resistance to English rule in Ireland and its position as an anti-treaty stronghold during the Irish Civil War (O’Flanagan and Buttimer, 1993).

Geographically Cork contains rivers such as the Blackwater, Lee and Bandon and although Cork contains many mountains, the majority of these do not belong solely to the county and this includes the Comeraghs, Knockmealdowns, Galtees, MacGillycuddy Reeks and Hungry Hill (Pochin Mould, 1991; Lawton, 1998). Similarly to county Waterford, the county’s location on the Atlantic Ocean offered the name of the ‘maritime county of Munster’ in the mid-19th century (Pochin Mould, 1991). 2006 census figures estimate that 481,295 people reside in County Cork with approximately 119,418 living in Cork City (CSO, 2007). Other major urban centres within the county include Carrigaline (9,044), Mallow (7,864), Youghal (6,393), Cobh (6,541) and Passage West (4,818) (CSO, 2007).

The area around Youghal was once covered with forests and woodlands and was called Eo-Chaille/Eo-Choill, derived from the Irish meaning Yew wood or the forest of the Yew trees (Pochin Mould, 1991; Flanagan and Flanagan, 1994). Youghal can be considered to be an important sea-port in the south of Ireland situated at the mouth of the Blackwater and the eastern extremity of County Cork and attracted invaders, merchants, pirates and civilians through the centuries (Wain, 1965; St. Leger, 1994). An early history of Youghal indicates

that the sheltered harbour of the town offered an attractive place for Norse invaders in the 9th century with the Normans following in the 12th century where they established a stronghold (Wain, 1965; Hackett, 1994). Youghal became established as a port and harbour exporting wool, iron, timber, fish, cattle and linen while shipbuilding and carpet manufacturing were also successful in the area (Wain, 1965; Pochin Mould, 1991; Hackett, 1994). As well as being created as an important port town in Ireland, Youghal also became established as a garrison town fortified with town walls and with the establishment of the Irish State, Irish soldiers came to occupy the military barracks in Youghal (Hackett, 1994). Youghal also gained recognition as the site for some of the scenes for the movie Moby Dick in 1956.

Unlike Dungarvan and Thurles, the sports clubs in Youghal are not currently listed with Cork Sports Partnership however an audit is currently taking place to identify all the sports clubs in the county. The Youghal Draft Development Plan and Youghal Chamber of Commerce list the following clubs and associated facilities; fishing, golf, pitch and putt, tennis, cycling, bowling, martial arts, badminton, handball, GAA, equestrian, athletics and rugby (Youghal Chamber of Commerce, 2008; Youghal Town Council, 2009). The income and expenditure of Cork County and Youghal Town Council for 2007 are illustrated below.

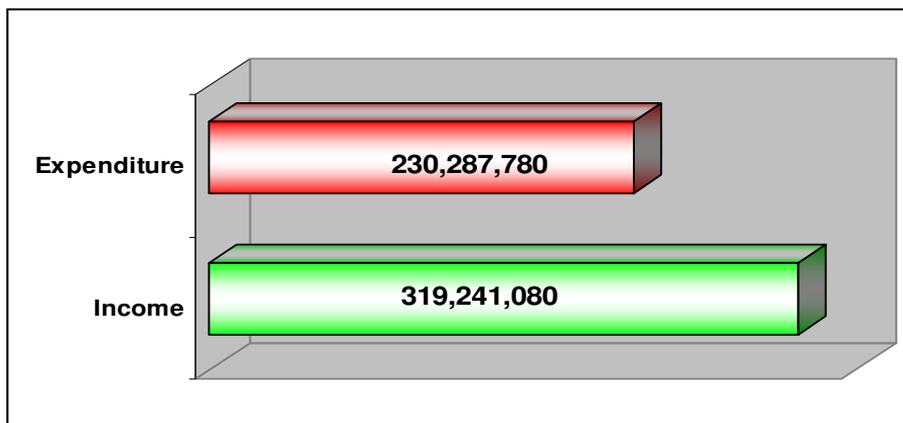


Figure 3.5 Income and Expenditure of Cork County Council
(Department of the Environment, Heritage and Local Government, 2007a).

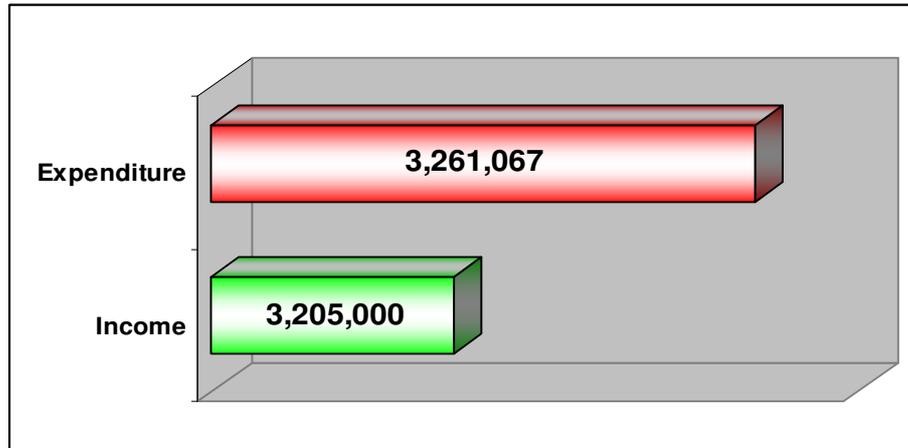


Figure 3.6 Income and Expenditure of Youghal Town Council
(Department of the Environment, Heritage and Local Government, 2007a).

Similarly to Dungarvan and Thurles, there are currently nine elected councillors on Youghal Town Council and the following individuals are senior officials employed by Youghal Town Council:

- Ms. Patricia Power – Town Manager;
- Mr. Liam Ryan – Town Clerk;
- Mr. Ger Lupton – Town Foreman;
- Mr. Jack McCarthy – Senior Executive Engineer;
- Mr. Sean McLoughlin – Senior Architect.

Recently all the secondary schools in Youghal amalgamated to form one school which caters for both boys and girls in the town and surrounding area. This school contained the following facilities suitable for physical activity:

- Pobal Scoil – Mixed School:
 - Sports Hall;
 - Basketball Courts;
 - Sports Pitches;
 - Netball Courts;
 - Tennis Courts.

Chapter Four - Methodology

4.1 Introduction

This chapter outlines how the research process was designed and used. The selection and reasoning of using a mixed method approach using qualitative and quantitative measures along with the selection and justification of the various instruments used. This section also contains background information about the areas being investigated, the sample of the study and the methods of collecting data; interviews, questionnaires and activity diaries. The methods used to analyse data will also feature in this section.

4.2 Research Design

According to Laporte et al. (1985) data can be retrieved to assess physical activity using at least thirty different methods. Under examination in this study is the investigation of adolescent physical activity patterns in conjunction with the role played by local authorities with regard to provision. These questions require the use of differing methods to obtain appropriate data. This has been termed a mixed method approach and may be referred to as a method of collecting and analysing data using both qualitative and quantitative research measures (Creswell, 2003). With this in mind, this study used both quantitative and qualitative measures. Neuman (2006) offers a simplistic explanation of both methods describing quantitative research as data expressed numerically and qualitative research as data expressed in words. The quantitative measures – questionnaires and activity diaries, will mainly seek to establish the physical activity patterns of adolescent participants. These measures allow for the establishment of facts, to make predictions and to find evidence which supports or does not support existing hypothesis (King et al., 1994). Quantitative research in particular may be viewed as an investigation method suitable for the complex social world in ways which may:

“emulate the scientific method as used in the natural sciences, with an emphasis on hypothesis testing, casual explanations, generalisation and predication” (Ritchie and Lewis, 2003, p. 14).

Although quantitative analysis can be diverse and complex particularly when dealing with raw data, this method contains a statistical technique conducted manually or electronically (Sarantakos, 2005). Quantitative research nonetheless can be beneficial by offering quick data processing and analysis, reliability and accuracy (Sarantakos, 2005).

This study also used qualitative research measures, namely interviews. Qualitative research involves utilising a reasonably small sample to represent the key constituents in the area under investigation (Smith and Stewart, 2001) resulting in “word-for-word quotations from those being studied” (McNeill and Chapman, 2005, p. 20) rather than numeric data. These contain minimal quantitative and mathematical techniques but link together the collection and analysis of the data in such a way as the identification of the data should lead to automatic analysis (Smith and Stewart, 2001). This directs the area in which the data was initially sought and will identify the order in which it will be ultimately analysed. Qualitative research takes place in the real ‘natural world’ using interactive methods which the researcher can use to explain social experiences holistically (Marshall and Rossman, 1999). Qualitative methods can provide detailed data necessary to structure subsequent quantitative inquiries by allowing data to be retrieved verbally and in printed form (Smith and Stewart, 2001). This allows for the production of descriptive data which represent the views and experiences of interviewees for analysis (Patton, 2002). Therefore, qualitative research aims to answer what is going on (Golden-Biddle, 1997) however, it differs:

“from conventional scientific inquiry in two major respects: firstly, the assumptions the researcher makes at the strategic level (how they view the world), and secondly, the methods employed (how to do it)” (Smith and Stewart, 2001, p. 2).

Therefore, this study will use both quantitative and qualitative research measures. In its simplest definition quantitative measures will product numerical data as a result of examining adolescent participants’ physical activity patterns through questionnaires and activity diaries. While qualitative measures will be used to attain data as a result of interviews. These methods were used to answer the predetermined research questions. The next section will briefly outline these research questions.

4.3 Research Questions

The methods described in section 4.2 were used to explore the following research questions:

5. The level of interest of adolescents in physical activity;
6. How influential are sporting families in promoting physically active adolescents;
7. What are the physical activity patterns of adolescents;
8. What is the role played by local authorities with regard to provision of funding, planning and facilities in physical activity.

In answering these questions, the researcher aims to examine the physical activity patterns of adolescents during and after school hours and the provision of facilities, planning and funding from a local government point of view from three similar sized and populated towns in Ireland. The research methods used were:

- Primary data research:
 - Interviews;
 - Questionnaires and activity diaries.
- Secondary data research.

These methods were selected to gain knowledge of adolescents regarding physical activity and into the operations of local authorities regarding provision. A background of the areas being investigated will now follow.

4.4 Location of Study

This survey was designed to examine three towns and determine what was being offered with regard to facilities for physical activity. Dungarvan, Thurles and Youghal were the towns chosen for this study. The main criteria for the selection of the towns chosen were:

- A town must not be situated in the same county as one of the other two towns;
- All towns must be similar in size and population (population of approximately seven thousand people).

The rationale for these criteria was that the towns examined would offer diversity in terms of location but a comparison in terms of size thus; the results might reflect what was occurring nationally in similar sized and populated towns. Overall it was hoped that these criteria would allow for a more objective look at adolescent physical activity patterns and what local authorities were undertaking in connection with provision. The selection process began by looking at towns close to Waterford City and then examining other similar sized towns. The first town chosen was Dungarvan which had an estimated urban population of seven and a half thousand people. New Ross was originally selected for the study but the interview with a Town Council official from New Ross was cancelled twice and the researcher was informed that this official would not be available for interview due to health problems restricting his occupation. Therefore, a local authority official in Youghal, which fitted the criteria, was approached. This was followed shortly afterwards by the selection of Thurles. A review of the research instruments used will now follow.

4.5 Research Instruments

A survey may be viewed as a system for collecting information to illustrate, compare and explain data, attitudes and behaviours (Fink, 1995) which can use an array of methods to gather this information. Research instruments must allow for validity (measure what it intended to measure) reliability (must consistently give the same results under the same circumstances), practicality (have acceptable costs for user and participant) and be non-reactive (must not alter the population or the behaviour it seeks to measure) (Laporte et al., 1985). Robson (2002) suggested that research can involve three ways to obtain data; watch people and try to work out what is going on, ask them about it and look out for fingerprints. Accordingly, it was decided to use three methods of collecting data – interviews, questionnaires and activity diaries which can all be considered a traditional, subjective measure of physical activity (Vanhees et al., 2005). Combining methods may provide researchers with the opportunity to collect multifaceted information (Boyle, 1997) which may be combined to test or formulate a hypothesis. Interviews with questionnaires and activity diaries were used in this study, these will be discussed now.

4.5.1 Interviews

A large amount of qualitative research involves using interviews which can be viewed as a well established research method (McCracken, 1988). An interview allows the interviewer to work directly with the interviewee and gives the interviewer the opportunity to ask probing, follow-up questions. Interviews also allow interviewers to interpret answers and to clarify misunderstandings which may occur during questioning (Black, 2005) which result in self-responsive open-ended answers. This should further result in simplistic data analysis while allowing for responses to be directly compared to an array of long or short questions (Cohen et al., 2000). Qualitative interviews allow for flexibility and can be a powerful tool which can open up many new areas for the researcher (Britten, 1995). However, qualitative interviews can contain pitfalls and can often be described as unstructured (Britten, 1995). Research interviews can cause other concerns, such as requiring one-to-one interaction between interviewer and interviewee and may take a considerable period of time (Black, 2005). Other weaknesses of this method may be that interviewees may be required to fit their experiences and feelings into the research's desired categories (Cohen et al., 2000). Other potential pitfalls of interviews can be outside interruptions/distractions (telephone and noise), the interviewer getting nervous, and the inability of the interviewer to remain impartial (Field and Morse, 1998).

There are numerous types of interviews including structured, semi structured and in-depth (Britten, 1995; McNeill and Chapman, 2005). Qualitative interviewers must attempt to gain the views of the interviewee and generally consist of directing prearranged questions (Britten, 1995). Interviews allow participants to discuss their interpretations of the world and to express their point of view (Cohen et al., 2000). Qualitative interviews also aim to discover, describe and understand an interviewee's knowledge of a certain topic (Britten, 1995; Kvale, 1996) while also requiring the interviewer to avoid enforcing the research structure. This requires the interviewer to remain impartial and objective to what may be uncovered as these may differ to what was predicted when commencing the research. Kendal and Kendal (2002) suggested numerous criteria for conducting a successful interview:

- Should contain open and closed questions;

- Should be recorded;
- Interviewees should be contacted on the day prior to the interview to confirm location and time.

The process of drafting interview questions began by identifying areas of importance and addressing these areas with appropriate questions. Bell (2005) described this as a two stage process of firstly, preparing a topic and secondly preparing various questions relating to that topic, so that the questions can cover the topic being investigated. Questions used in the interviews were not taken from any other study. Therefore, the use of interviews, where prepared questions and self-responded open answers were determined in advance in a structured manner, was considered to be the most suitable method for qualitative data collection in this study. A copy of the interview questions is contained in Appendix F.

Approaching potential candidates prior to the commencement of data collection seeking permission can be considered to be a vital element in research (McNiff et al., 2002). With this in mind, letters detailing the nature of the study were sent to local authority officials requesting an interview at their convenience. This was followed by a telephone call to the office of the intended interviewee to arrange a location and time for the interview. Interviews were conducted in the office of Town Managers/Town Clerks and were recorded on a digital dictaphone. The interviews were subsequently transcribed with a fully transcribed copy forwarded to each interviewee. Cohen et al. (2000) identify transcribing as a crucial step as there may be a potential for data loss or distortion if this process is omitted. These interviews provided an invaluable insight into the main research by meeting a ‘decision maker’ at a high level of local authority government. The use of personal interviews was also advantageous in:

- Allowing for a greater level of informality between interviewer and interviewee resulting in a more open interview;
- Allowed the interviewee to express him/her self more easily as opposed to the views of the interviewer being imposed;
- Permitted the interviewee to communicate in a more natural manner;
- Allow for a greater rapport and trust during the interview as these interviews were conducted face-to-face in a quiet office setting, free from outside intrusion.

There are five distinct sections contained within the interview:

Section one – management; seeks background information about the official being interviewed and the area within his/her administration.

Section two – housing; seeks to gather information about planning procedures with a particular reference to the provision of public open space within planning projects.

Section three – adolescents; seeks to establish whether the official was aware of the adolescent issues in their administrative area, had he/she ever been approached by adolescents to provide facilities and whether there was any specific policy to deal with adolescent issues.

Section four – facilities; contains questions about facility provision suitable for physical activity, suitability of these facilities, local providers and future plans with regard to facilities.

Section five – funding; contains questions about the funding available to and from local authority for physical activity and the funding process.

Interviews sought to gain an insight into a number of areas of interest of which the interviewees had an extensive knowledge. The purpose of interviewing these senior officials was to meet a decision maker within local authorities face-to-face in a structured manner to monitor facility provision and adolescent issues from a local government perspective. These interviews provided an invaluable data source into the key research context that would not otherwise have been available. Once these interviews had been completed the next step would entail determining what actually existed on the provision side through the eyes of adolescent users and to examine the physical activity patterns of adolescents. Therefore, schools in the same towns as the interviewees were approached to discuss the possibility of conducting the second phase of this section; the distribution of questionnaires and activity diaries to pupils aged between twelve and nineteen years. The next section will outline questionnaire use.

4.5.2 Questionnaires

Questionnaires were one of the main research methods used to obtain data for this study. Questionnaires offer a “stable, consistent and uniform measure” (Sarantakos, 2005, p. 263) and can be used to collect two types of information; facts and opinions (Thomas, 2003). Other advantages of using questionnaires include convenience for respondents, offer greater anonymity, speed of administration, less expensive and timesaving (Bryman, 2004; Sarantakos, 2005). McNiff et al. (2002) suggested two motives for using questionnaires; (1) to find out basic information that cannot be ascertained otherwise and (2) to evaluate the effect of an intervention, when it is appropriate to get feedback in another way. Questionnaires can be considered an information gathering technique which allows analysts to study attitudes, beliefs, behaviours and characteristics of a number of people (Kendal and Kendal, 2002). An adequate questionnaire should have the same properties as a good law:

“being clear, unambiguous and uniformly workable. Its design must minimise potential errors from respondents And since people’s participation in surveys is voluntary, a questionnaire has to help in engaging their interest, encouraging their co-operation, and eliciting answers as close as possible to the truth” (Cohen et al., 2000, p. 250).

However, designing a good questionnaire may be more difficult than one might imagine and great care must be taken in writing a question, selecting a question type, and in the design, piloting, distribution and return of questionnaires (Kendal and Kendal, 2002; Bell, 2005). The questionnaire used in this study contained open-ended and closed questions which require circling and/or writing the appropriate answers. Following a review of the literature the questionnaire and activity diary were constructed. The questionnaire contained 58 questions seeking to obtain the views of adolescents in relation to their physical activity patterns. Some of the questions used in the questionnaire were taken from previous studies on youth sport/physical activity (Baecke et al., 1982; Connor, 2003; Burns, 2004) but some of the questions were self designed. Prior to the start of the study, topic areas were laid out and questions were designed relating to these topics.

There are four distinct sections contained within the questionnaire (Appendix G) which also includes the activity diary:

Section A: General information; provided an indication of school, age, gender, urban or rural, background information of parents/guardians, distance to school, how participants travelled to school and the number of school books carried.

Section B: Physical activity; contained questions relating to areas/locations for physical activity, sports club membership, whether participants considered themselves to be physically active, participation in physical activities after school, state of local facilities and most likely activities participated in by participants.

Section C: Physical activity in school; contains questions about physical activities participated during school hours, facilities available in school for physical activity, time devoted to physical activity in school, level of participation in physical education, school teams and participation in physical activities during lunch/break time.

Section C: Activity diaries; contain questions relating to the type of physical activity, time devoted to physical activity, where the activity occurred and whether the activity occurred in school, in a competitive or casual manner.

There were no time restrictions to complete the first three sections of the questionnaire but it was estimated that each questionnaire (section one to three) would take thirty minutes to complete. Participants completed questionnaires while in a group setting in their school classrooms/assembly areas. Completion of activity diaries (section four) would take approximately five minutes to complete each evening for a period of one calendar week. Questionnaires and activity diaries contained various responses, mainly to circle or write predetermined choices to obtain data. Approximately five hundred questionnaires and activity diaries were distributed. Under initial analysis four hundred and seventy six questionnaires were adequately completed and thus considered suitable for further analysis. The next section will examine the use of activity diaries in more detail.

4.5.3 Activity Diaries

Diaries offer an attractive way to obtain data about how people spend their time, covering daily, weekly and/or monthly points in time (Bell, 2005). Diaries can be a valuable method in data collection when there appears to be no other means available and when used in a small sample for a short period of time (Bowling, 2002). Diaries can be generally accepted to be unsolicited and have been used in the past with great success acting as a self-administered questionnaire (McNeill and Chapman, 2005) once completion instructions have been properly issued. Diaries can act as a self-administered survey and can be advantageous in allowing respondents to answer and return their diary within a period of a few days (Dillman, 2000) which may be a critical element of data collection using diaries. On the other hand, diary use can be problematic, time consuming and somewhat irritating for respondents not fully committed to the study (Bell, 2005). Considerations need to be made to explain to respondents what is expected of them and to also explain the correct process of completion (Dillman, 2000). Another potential problem of using diaries can be that by asking respondents to write up a diary, this may cause him/her to change the very behaviour the study seeks to record (Oppenheim, 2000). Activity diaries contained questions relating to factors such as type of activity, time participating, where activity occurred and whether activity was school, competitive or casual based. These questions were modified from those used in a previous study on physical activity (Burns, 2004).

Activity diaries were chosen and used in this study and required respondents to report their physical activities, where this activity had taken place, the time taken and to highlight whether the activity was school based, competitive or casual in nature. Under inspection one hundred and five activity diaries were adequately completed and thus considered suitable for analysis. The next section will outline the sampling process and the rationale for choosing this group of individuals to obtain data.

4.6 The Sample

The selection of an adequate sample to complete primary research involved recognising and targeting a population rich in appropriate information or knowledge relative to the subject matter (Patton, 2002). As it was necessary to locate an appropriate sample for questionnaire and activity diary completion and interviews with relative ease, a convenient sampling method was used. This sample is “constructed by enlisting easily accessible and willing persons” (Sarantakos, 2005, p. 425). However, the sample for this study was also selected on the basis of fulfilling a certain criteria but primarily on the basis of purpose. For example, adolescent participants were approached for the specific purpose of obtaining data about their physical activity patterns while fulfilling the criteria of being aged between twelve and nineteen years. Similarly local authority officials were approached for the purpose of obtaining detailed information about the operations of local authorities. Purposeful sampling occurs when “respondents are chosen according to the researcher’s judgement as to their suitability for the project” (Sarantakos, 2005, p. 431). Therefore, a combination of purposeful and convenience sampling was used in this study. The sample for this study comprises of two categories – key local authority officials and adolescents in second level education. These two groups will be outlined now.

4.6.1 Interview Participants

In order to attain sufficient data on the provision of facilities, planning and finances directed towards adolescent physical activity by local authorities, it was decided to contact Town Councils as opposed to County Councils. With this in mind Town Managers/Town Clerks were deemed the most suitable interview candidates as they would constitute the most senior officials within Town Councils. The significance of choosing Town Managers/Town Clerks as opposed to other officials within Town Councils was that these officials would be responsible for making major decisions within Town Councils. The first phase of this section involved conducting an interview with local authority officials, Town Managers/Town Clerks, in the towns of Thurles, Co. Tipperary, Dungarvan, Co. Waterford and Youghal, Co. Cork. These interviewees were:

Tom Barry; has worked for 35 years in local government, in Dublin, Limerick and North Tipperary where he serves many roles including Town Manager in Thurles. Previous functions have ranged from clerical officer, County Development Officer, Enterprise Officer, County Secretary and Director of Community and Enterprise.

Joe O' Flaherty; has worked for 26 years in local government in Cork City and now with Waterford County Council as Town Clerk in Dungarvan. His principal function has been housing and is now acting as Town Clerk which covers all facets of local authority services.

Patricia Power; has worked in local government for 28 years primarily in Cork and has acted as Town Planner progressing to Senior Planner. She now holds the role of Director of Services within Cork County Council with Youghal Town Manager falling within this remit.

The next section will look at adolescent participants completing questionnaires and activity diaries.

4.6.2 Questionnaire and Activity Diary Participants

The second phase of data collection involved distributing a questionnaire and activity diary. This occurred by approaching secondary schools from towns managed by the local authority officials previously interviewed. Letters of introduction were sent to school principals and boards of management explaining the nature of the study and the method of data collection. Once permission was granted by school principals and boards of management, further letters of introduction and consent forms were distributed to adolescent pupils to take home to their parents/guardians. In order for adolescents to participate in this study they must firstly, obtain written consent from their parents/guardians and secondly, sign the student consent form. The criteria for selection of those completing questionnaires and activity diaries were:

- Adolescent male or female attending secondary school;
- Aged between twelve and nineteen;

- Adolescents studying for the Junior and Leaving Certificate examinations were not considered;
- Respondents must not be exchange students temporarily residing in Ireland;
- Returned questionnaires must be completed fully.

The significance of using these criteria were that questionnaires and activity diaries would represent the voice of those aged between twelve and nineteen in second level education in Thurles, Dungarvan and Youghal, with regard to their physical activity patterns and result in a balance in terms of gender. Adolescents completing Junior and Leaving Certificate were excluded to allow them to concentrate on their studies. Exchange students were excluded because they resided in Ireland for a short period of time and presented data of their physical activity patterns on the basis of their experiences in their homeland. For instances, on a few occasions while analysing questionnaires, it emerged that some adolescents used facilities that were not available in the towns studied – Olympic swimming pool. When these questionnaires were examined in greater detail, they revealed that those participants emerged from another European country. As data was sought in relation to experiences of what facilities were available locally, these students were deemed to be unsuitable for the study. In total between five and seven returned questionnaires were not considered for use due to the participant being an exchange student.

On some occasions other returned questionnaires did not have adequate sections completed to warrant use, for example, only two or three pages completed. This occurred on approximately twenty occasions. The main questionnaires and activity diaries were delivered and distributed by the researcher to participants in their schools. Schools were used because:

- They provided the researcher with an ideal sample;
- Allowed access to a large number of adolescents who are in second level education;
- Schools have large classrooms/assembly areas which could cater for large numbers.

Details of the number of participants, their school and gender are listed in table 4.1 below.

		Gender	
		Male	female
Schools	Christian Brothers	39	
	Scoil Na mBraithre	100	
	Ardscoil Na Deise		63
	Presentation Convent		30
	Ursuline Convent		55
	Colaiste Chathail Naofe	29	8
	Gairm Scoil Mhuire	15	2
	Pobal Scoil Na Trionoide	34	43
	St. Augustine's College	25	32

Table 4.1 Schools and Gender of Participants

In total 242 males and 233 female participants were questioned from the following schools:

- Two all boys' schools – Scoil Na mBraithre, Dungarvan and Christian Brothers, Thurles;
- Three all girls' schools – Ardscoil Na Deise, Dungarvan, Presentation and Ursuline Convents, Thurles;
- Four mixed or Co-Ed schools – Colaiste Chathail Naofe and St. Augustine's, Dungarvan; Gairm Scoil Mhuire, Thurles and Pobal Scoil Na Trionoide, Youghal.

Therefore, there were four secondary schools in Dungarvan and Thurles while there was one secondary school in Youghal. Prior to the collection of primary data a pilot study was carried out which will be described now in the next section.

4.7 Pilot Study

A pilot study commenced just prior to the collection of primary data from interviews and questionnaires and activity diaries. An interview was conducted preceding the three main interviews with a senior local authority official in a town not involved in this study. This interview was recorded on a digital recorder and subsequently transcribed. The interviewee was asked to voice his opinion on the structure of the interview questions and requested to offer advice on areas which could be excluded and areas to include in the study. Following this pilot interview it was decided to reduce the number of questions as this interview took

too long to complete and to restructure numerous questions as some of the questions overlapped. The primary purpose of the pilot interview was to:

- Test the suitability of recording equipment;
- Test the appropriateness of the questions;
- Establish the interviewees understanding of study;
- Assess the researchers interviewing ability;
- Assess the suitability of a venue for conducting the interview.

Similar to the pilot interview, a pilot questionnaire and activity diary were also used prior to the collection of primary data. Piloting questionnaires are considered to be of paramount importance to the overall success of the research (Oppenheim, 1997) by increasing the reliability, validity and practicability of the questionnaire (Cohen et al., 2000). Pilot questionnaires and activity diaries were distributed to adolescent students in Kildalton College, Co. Kilkenny (a school outside of the study) with this trial sample randomly chosen on the basis of:

- Equal gender balance;
- Fulfilling aged requirements (not older than nineteen years).

Pilot questionnaires and activity diaries were distributed to discover the length of time it took to complete the questionnaire and to determine whether the questionnaire was appropriately designed for adolescent participants in terms of understanding what was being asked and could they comprehend the instructions set down (Bell, 2005). As a result of this pilot study, it was determined that some minor changes were necessary in terms of re-wording or modifying some questions. The pilot study indicated that time allocated for completion of a questionnaire coincided with estimates determined at the commencement of this phase of the study. Ethical authorisation was an obligatory requirement prior to conducting interviews, questionnaires and activity diaries, and was granted by Waterford Institute of Technology following a review and defence of the research methodologies. Ethical issues play an important part in research as the researcher has the responsibility to search for truth and must consider the dignity of the sample used in the overall research project (Cohen et al., 2000) while protecting the samples' anonymity and confidentiality. The two stages of data collection will now be described.

4.8 Data Collection

Data was collected in two stages; firstly, the collection of qualitative data through interviews and secondly, the collection of quantitative data through questionnaires and activity diaries. Interviewees were not issued with specific instructions and a single interview took approximately forty minutes. Interviews examining qualitative issues of local authority provision occurred on the following dates:

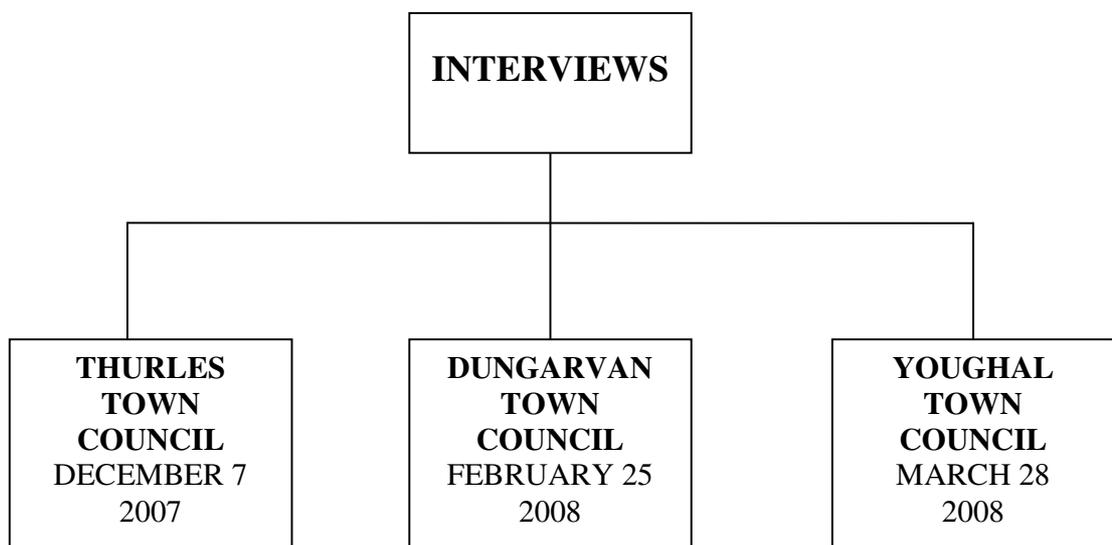


Figure 4.1 Dates of Interviews

The questionnaire and activity diary examining quantitative issues of the physical activity patterns of adolescent participants were distributed on the following dates:

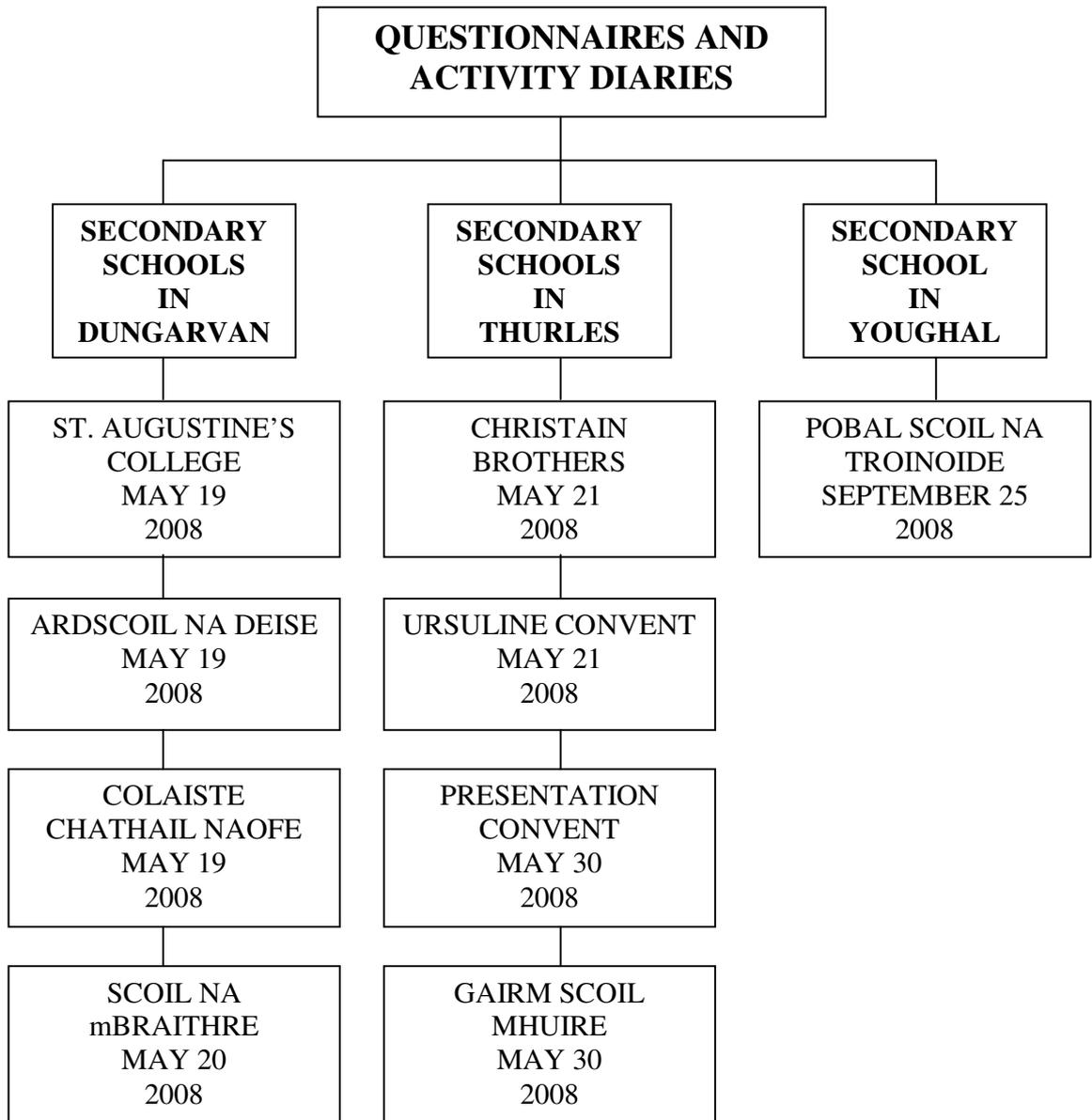


Figure 4.2 Dates of Questionnaire and Activity Diary Distribution

In four of the nine schools attended the researcher remained on hand to supervise questionnaire completion. In the other five schools it was not possible to supervise questionnaire completion and instructions were issued to teachers on correct completion procedures. Questionnaires were firstly distributed to participants to complete and verbal instructions were issued on how to correctly answer each section. Questionnaires also contained written instructions to aid completion. On the conclusion of this process, questionnaires were collected and all participants were issued with an activity diary to take home for completion. Again verbal instructions were issued on how to correctly complete the activity diaries and the diaries contained written instructions and examples to aid completion. Participants were instructed to take the diary home and to complete each section at the end of each day for a period of one calendar week – Monday to Sunday. There was no subset of the overall group used to complete activity diaries as every participant was issued with a diary. However, of the total number of activity diaries distributed, approximately a quarter were returned and of this number, approximately twenty were not sufficiently completed. This resulted in a disparity in relation to the number of questionnaires returned compared to the number of activity diaries returned. One week after activity diaries were allocated to participants, they were collected by the researcher. The next section will briefly outline the methods used to analyse data.

4.9 Data Analysis

The data obtained from interviews was transcribed, analysed, interpreted and coded by the researcher. This process has been cited as a critical element of data organisation and analysis (Smith and Stewart, 2001). Coding can be described as an observation through the use of symbols to act as a measure or for analysis in place of responses (Sarantakos, 2005). Indeed coding has been identified as a popular method with the majority of qualitative researchers using the technique for their analysis of data (Taylor and Bogdan, 1998). The coding process involves bringing together data and analysing it under major themes, ideas and concepts (Taylor and Bogdan, 1998). Themes noted for the purpose of coding in this case being adolescence, planning (open space provision) facilities, planning and funding. Dominant themes and issues uncovered during interviews were noted to form categories

which were later analysed in detail. Analysis also involved transcribing digitally recorded interviews and sending a transcribed copy to each interviewee. The completed questionnaires and activity diaries were analysed manually by the researcher. The data was processed using Statistical Package for the Social Sciences (SPSS) and Microsoft Excel. These packages allowed the data to be cross-referenced and for the production of graphical displays. SPSS 17.0 was used for statistical inference, the explanatory variables in this study were all categorical in nature, for example, gender and urban/rural status. Thus, when the dependent variable was also categorical; preferred activity (physical, watching TV, listening to music), the Pearson chi-square test was used for analysis. The 5% level of significance was used throughout for example, sample differences between groups were deemed statistically significant if, and only if, the associated p-value was less than 0.05.

4.10 Limitations

Accurately measuring physical activity patterns may be difficult due to the many interrelated/interchangeable dimensions between physical activity, exercise and fitness which can be measured using a multitude of methods (Laporte et al., 1985). Qualitative research may be a useful approach to uncover the knowledge and views of people however, qualitative methods may be limited in its ability to ensure a wide coverage of responses from the wider population (Smith and Stewart, 2001). Data retrieved from qualitative research may be subject to lengthy analysis and can be time consuming. This was the case with recorded interviews which took many hours to transcribe and further time to code the results. Bouchard (2000) and Laporte et al. (1985) point out that diaries and questionnaires are limited due to the time factor of completion while the memory of the respondent may also be a factor. Questionnaire and diary completion can be a limitation as they depend on respondents to complete them adequately (Vanhees et al., 2005). Although time and resource factors restricted the number of interviewees and questionnaire respondents who took part in this study, their views and knowledge are important to record. Further limitations of this study may be the use of self-reporting measures – questionnaires and activity diaries, may not accurately reflect true levels of physical activity and the inexperience of the researcher in academic investigation.

4.11 Summary

This chapter has presented the field research methods used for collecting primary data. Also featured was an outline of the location of the study, research instruments; interviews, questionnaires and activity diaries, and examined the sample. This section also contained a brief look at the pilot study initiated before primary data collection began and contained a section of the analysis of data. Consideration was also made with regard to limitations. The next chapter will present and discuss the findings from the research.

Chapter Five - Presentation and Discussion of Findings

5.1 Introduction

This chapter will present and discuss the findings from questionnaires, activities diaries and interviews. The aim of this study was twofold; firstly to examine the physical activity patterns of adolescents and secondly to examine the level of local authority provision to assist adolescents to become physically active. Physical activity patterns refer to physical activities participated in during and after school hours. The combination of qualitative and quantitative data gathered during the course of this study aimed to provide feedback on the type of physical activities participants are interested in, the most likely location where physical activities may occur and the role local authorities played in providing facilities, funding and planning for physical activity. Four hundred and seventy six questionnaires were used in this study as well as one hundred and five activity diaries. Three interviews were also conducted with senior officials within local authorities in Dungarvan, Thurles and Youghal, where the questionnaires and activity diaries were distributed. This chapter is broken into four sections and will be presented in the following manner which will attempt to answer the research questions:

1. The level of interest of adolescents in physical activity;
2. How influential are sporting families in promoting physically active adolescents;
3. What are the physical activity patterns of adolescents;
4. What is the role played by local authorities with regard to provision of funding, planning and facilities in physical activity.

The findings will be differentiated according to gender and urban/rural status. 242 males and 233 female respondents (one respondent omitted their gender on the questionnaire) participated in this study. 283 originated from a rural background compared to 188 from an urban background (five respondents omitted their background). Supplementary data from activity diaries will also be included into the section on physical activity after school hours, on the location of physical activities, setting for physical activity and time. Activity diaries did not ask respondents to denote their gender, urban/rural status or school.

Research Question 1

5.2 The level of interest of Adolescents in Physical Activity

This section addresses the research question: The level of interest of adolescents in physical activity? There may be numerous factors influencing adolescent interest in physical activity, these may include:

- Do respondents consider themselves to be physically active;
- What are the most likely activities participated in by respondents;
- Have respondents joined sports clubs;
- Do respondents participate in physical activity after school hours.

5.2.1 Do respondents consider themselves to be physically active

Overall 81% of the respondents considered themselves to be physically active – table 5.1. There were gender differences with boys (89%) indicating a higher positive response than girls (73%). These differences were statistically significant ($p < 0.001$, Pearson Chi-square test). Responses of urban/rural participants were similar (urban 83% and rural 80%) which were not statistically significant. Although respondents indicated that they consider themselves to be physically active, there was a decline in physical activity as respondents moved through adolescence. For example, 12 (91%) and 13 (95%) year old respondents showed higher positive responses than 17 (73%) and 18 (60%) year old respondents. These differences were statistically significant ($p < 0.001$, Pearson Chi-square test).

			Are you physically active			Total
			yes	no	other	
Gender	male	Count	212	27	0	239
		% within Gender	88.7%	11.3%	.0%	100.0%
	female	Count	170	57	5	232
		% within Gender	73.3%	24.6%	2.2%	100.0%
Total		Count	382	84	5	471
		% within Gender	81.1%	17.8%	1.1%	100.0%

Table 5.1 Are you physically active-Gender

Many studies found low levels of adolescent participation in physical activity (Gordon-Larsen et al., 2004; Marren, 2005; Nelson et al., 2006; Department of Health and Children, 2007; Taveras et al., 2007). However, the findings indicated that respondents have high levels of participation in physical activity, therefore, corresponding with other studies which also found that Irish adolescents displayed high levels of participation in sport/physical activity (Schneider, 2000). There were varying degrees of participation; especially the difference in participation between boys (89%) and girls (73%). These varying levels of physical activity illustrated in the findings by boys and girls were also acknowledged in other studies (Epstein et al., 2001). Similarly, other studies supported the findings of boys displaying higher physical activity levels than girls (Nelson et al., 2006). However, physical activity declined with age, this was evident as respondents progressed in age and through education. This pattern of physical activity declining during adolescence was also found in national and international studies which found declines in physical activity as one progresses from childhood (Gordon-Larsen et al., 2004; Department of Health and Children, 2007). Figure 5.1, highlights the most cited reasons why 80 respondents reported they were not physically active. Overall the most cited reason was ‘not interested/don’t like sport’ (24%).

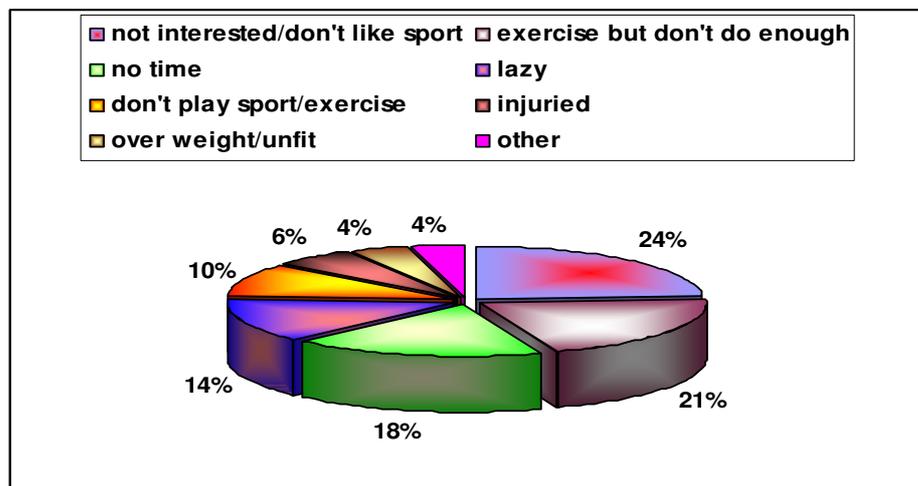


Figure 5.1 Reasons for physical inactivity

5.2.2 What are the most likely activities participated in by respondents

Table 5.2 shows the preferred activities of respondents according to gender. There are clear differences evident between boys and girls. For example, almost 67% of boys prefer physical activity/sport, compared with 49% of girls. These differences were statistically significant ($p < 0.001$, Pearson chi-square test). On the other hand 21% of girls prefer listening to music, compared with 7% of boys. These differences are also statistically significant ($p < 0.001$, Pearson chi-square test).

		Activity most likely to participate in					
		physical activity/sport	computer games	Watch TV	listen to music	other	Total
Gender	male	153 66.8%	26 11.4%	19 8.3%	17 7.4%	14 6.1%	229 100.0%
	female	109 48.7%	7 3.1%	38 17.0%	47 21.0%	23 10.3%	224 100.0%
Total		262 57.8%	33 7.3%	57 12.6%	64 14.1%	37 8.2%	453 100.0%

Table 5.2 Most likely activities-Gender

Table 5.3, shows the preferred choices of urban and rural respondents. There are little differences evident with regard to physical activity/sport and computer games however, with regard to watching television and listening to music differences occur. Nearly 16% of rural respondents listed watching television, compared to 7% of urban respondents, while 19% of urban respondents showed a preference to listening to music, compared to 10% of rural respondents. These differences are statistically significant ($p = 0.017 < 0.05$, Pearson chi-square test).

		Activity most likely to participate in					
		physical activity/sport	computer games	Watch TV	listen to music	other	Total
Urban or Rural	urban	101 57.7%	14 8.0%	13 7.4%	34 19.4%	13 7.4%	175 100.0%
	rural	159 57.6%	19 6.9%	44 15.9%	30 10.9%	24 8.7%	276 100.0%
Total		260 57.6%	33 7.3%	57 12.6%	64 14.2%	37 8.2%	451 100.0%

Table 5.3 Most likely activities-Urban/rural

These findings differ from other studies which found that adolescents had adapted a lifestyle of watching television or playing video games rather than participating in physical activities (de Róiste and Dinneen, 2005; Özdirenç et al., 2005). However, a gender disparity did exist with boys displaying a greater likelihood to engage in physical activity and computer games than girls. These trends were also supported in previous studies (Aarnio et al., 2002; Norman et al., 2005). In contrast, girls showed higher levels of listening to music and watching television than boys which are similar to the findings of (Mulvihill et al., 2000; Norman et al., 2005). These findings differ somewhat from other studies which offered that boys were more likely to watch television and play computer games and girls were more likely to read or do homework (WHO, 2000; Utter et al., 2003).

Studies examining the interests of urban/rural adolescents found differing results. On one hand, it was found that both urban and rural adolescents displayed low levels of participation in physical activity instead favouring sedentary activities such as watching television and playing computer games (Sjolie and Thuen, 2002; Liu et al., 2007). This pattern was not found in this study where it was found that both groups displayed higher levels of involvement in physical activity than sedentary activities. However, on the other hand, it was found in previous studies that rural adolescents displayed an inclination to be less physically active and more sedentary (Kristjansdottir and Vilhjalmsón, 2001). This was displayed in part in the findings with rural respondents indicating a higher participation in sedentary activities (watching TV and listening to music) than urban respondents but rural respondents in this study also showed higher levels of participation in physical activity than sedentary activities.

5.2.3 Have respondents joined sports clubs

Table 5.4 next page, indicates the level of sports clubs membership. Overall 63% of the respondents indicated a positive response level with a 71% positive response from boys compared to 56% for girls. These differences are statistically significantly ($p < 0.001$, Pearson chi-square test). There were also differences between urban/rural groups, with 55% of urban respondents claiming membership of sports clubs compared to 68% of rural

respondents. These differences are statistically significant ($p=0.003<0.05$, Pearson chi-square test). Membership of sports clubs also declined as respondents moved through adolescence. For example, 12 (81%) and 13 (78%) year old respondents showed higher levels of membership of sports clubs than 17 (60%) and 18 (40%) year old respondents. These differences were statistically significant ($p<0.002$, Pearson chi-square test). Previous studies found adolescent membership of sports clubs in Ireland to be high (Fahey et al., 2005; Department of Health and Children, 2007) but this was not indicated in the findings which showed moderate levels of membership of sporting clubs. The findings agree with other studies which also found a trend of boys being more inclined to be drawn towards competitive sports than girls (Mulvihill et al., 2000; Connor 2003).

	Boys	Girls	Overall	Urban	Rural
Yes	71%	56%	63%	55%	68%
No	29%	44%	37%	45%	32%

Table 5.4 Membership of sports clubs

Table 5.5 shows the two most popular sports clubs joined by respondents according to overall, gender and urban/rural status. GAA were the most popular clubs joined by respondents with soccer the second most popular club joined. Some sports clubs were more popular depending on the gender of the respondent, for instances, golf (9%) features as a top three response for boys but does not feature for girls. Popular sports clubs joined by girls were – athletics (8%), hockey, basketball and tennis (all 5%), but the levels of membership to these sports appeared low.

	Boys	Girls	Overall	Urban	Rural
GAA	34%	38%	36%	29%	39%
Soccer	21%	10%	17%	19%	15%

Table 5.5 Most popular sports clubs

Other studies noted that boys tended to be drawn towards competitive sports more so than girls (Mulvihill et al., 2000) which was illustrated to a degree in the findings. Nonetheless girls still joined GAA, soccer, and other sports clubs. Similarly to physical activities participated in, boys and girls tend to be more inclined to be attracted towards certain

sports. For example, after the top two responses (GAA and soccer) golf and rugby were more popular with boys and did not feature amongst girls. On the other hand hockey, basketball and tennis clubs achieved higher membership from girls than boys. GAA and soccer clubs were also the most popular clubs joined by urban and rural participants. However, a decline in membership of sports clubs was found as respondents progressed in age and in school, with both of these differences statistically significant ($p < 0.001$ for school year, and $p < 0.002$, for age, Pearson chi-square test). This pattern of declining membership of sports clubs was also found in other studies (de Róiste and Dinneen, 2005)

5.2.4 Do respondents participate in physical activity after school hours

Overall 78% of the respondents participate in physical activity after school hours – table 5.6, next page. There were slight differences evident between boys (81%) and girls (75%) which were not statistically significant ($p = 0.120$, Pearson chi-square test). This pattern of boys being more physically active after school hours was also found in other studies (Mulvihill et al., 2000). Urban/rural replies showed similar positive responses (urban 77% and rural 78%) which were not statistically significant. After school hours was noted as a critical time for adolescent participation in physical activity where it has been found that participation in physical activities after school hours was associated with high levels of physical activity in adulthood (EHHI, 2001; Tammelin et al., 2003). Somewhat similar to previous trends found in this study; declines in membership of sports clubs and physical activity with age, participation in physical activities after school hours did decline with age but declined later in adolescence. For instance, activity levels after school hours were high for 12 (71%) to 15 years (86%) where it peaked but from this point declines were evident to 18 years (16 years 80%, 17 years 75% and 18 year 40%). These differences were not statistically significant.

			Activities after school			Total
			yes	no	sometimes	
Gender	male	Count	189	44	0	233
		% within Gender	81.1%	18.9%	.0%	100.0%
	female	Count	169	55	2	226
		% within Gender	74.8%	24.3%	.9%	100.0%
Total		Count	358	99	2	459
		% within Gender	78.0%	21.6%	.4%	100.0%

Table 5.6 Do you participate in physical activity after school hours-Gender

In summary, in addressing the first research question; the level of interest of adolescents in physical activity. Overall the majority of the respondents indicated that they appear to be interested in physical activity participation. This was indicated in the higher level of positive responses than negative responses when respondents were questioned about whether they participate in physical activity, the most likely activities participated in (physical activity/sport), whether they joined sports clubs and their participation in physical activities after school hours. However, there were gender differences, with boys indicating higher positive responses than girls in all four categories. Girls on the other hand indicated that they were more likely to watch TV and listen to music than boys. In comparing urban/rural groups, there were similar responses in three of the four categories but rural respondents showed much higher membership levels of sports clubs than urban respondents. The most popular sports club joined was GAA for all groups (overall, gender and urban/rural) but girls and rural respondents showed higher levels of membership than boys and urban groups. Lack of interest was the main reason cited by those who did not consider themselves to be physically active. However, although respondents indicated that they are interested in physical activity participation; levels of interest in physical activity are higher in the early years of adolescence and declines somewhat with age. This was evident in the declines with age which were noted when respondents were asked if they consider themselves to be physically active, their membership of sports club and participation in physical activities after school hours.

Research Question 2

5.3 How Influential are Families in Promoting Physically Active Adolescents

This section will address the second research question: How influential are sporting families in promoting physically active adolescents? This included examining:

- Do respondents receive encouragement from home to participate in physical activity;
- Parental physical activity and its impact on their child's physical activity;
- Which parent is most influential.

5.3.1 Do respondents receive encouragement from home to participate in physical activity

Table 5.7, next page, represents the opinions of the respondents in relation to whether they are encouraged to be physically active by those at home and how this may impact their participation in physical activity. Overall 86% of the respondents indicated that they were physically active when they were encouraged by persons at home. When respondents indicated that they were not encouraged to be physically active from those in the home, this figure dropped to 67%. Gender responses indicated that boys (92%) showed higher levels of participation than girls (79%) once they were encouraged from those in the home to be physically active. These differences were statistically significant ($p < 0.001$, Pearson chi-square test). Further odds ratio analysis on these data showed that boys who received encouragement from home were 2.9 times more likely to be physically active than boys who do not receive encouragement from home to be physically active. Similarly girls who receive encouragement from home were also 3.3 times more likely to be physically active than girls who do not receive encouragement from home to be physically active. Urban/rural responses were similar, in that encouragement from the home was apparent in influencing both urban (87%) and rural (84%) responses. This figure dropped when encouragement was not indicated from home (urban 71% and rural 62%). These

urban/rural differences were not statistically significant. The findings showed that when respondents received encouragement from home, their participation levels in physical activity were higher than if they received no encouragement from home. This trend was particularly relevant with boys more so than girls. When encouragement was not forthcoming from home, participation levels in physical activity dropped sharply with boys and girls. This trend of physical activity dropping was also shown amongst urban/rural groups. The findings correspond with other studies which noted the importance of those in the home in encouraging adolescents to be physically active (Hohepa, 2008). It was also found in another study that parental support in particular can be especially beneficial to their child's involvement in physical activity (Troost et al., 2003) which was shown in the findings.

Encouraged to be active by those at home				Are you physically active		Total
				yes	no	
Yes	Gender	male	Count	166	15	181
			% within Gender	91.7%	8.3%	100.0%
		female	Count	134	32	170
			% within Gender	78.8%	18.8%	100.0%
	Total		Count	300	47	351
			% within Gender	85.5%	13.4%	100.0%
No	Gender	male	Count	45	12	57
			% within Gender	78.9%	21.1%	100.0%
		female	Count	32	25	58
			% within Gender	55.2%	43.1%	100.0%
	Total		Count	77	37	115
			% within Gender	67.0%	32.2%	100.0%

Table 5.7 Encouragement from home to participate in physical activity

5.3.2 Parental physical activity and its impact on their child's physical activity

Parental involvement in physical activity appears to be associated with their child's physical activity participation. Table 5.8, shows separately for boys and girls, the relationship of adolescents' physical activity status to that of their parents. For sons of physically active parents, 94% are themselves physically active, compared with 81% of sons of physically inactive parents. The corresponding percentages for daughters are 79% and 66%. For both boys and girls, these differences are statistically significant ($p < 0.002$ for boys, $p < 0.023$ for girls, Pearson chi-square test). Further odds analysis of these data showed that if a male respondent has parents who are physically active, then this boy would be 3.8 times more likely to be physically active than a boy who has an physically inactive parent. Similarly, if a female respondent has physically active parents, this girl would be 2.3 times more likely to be physically active than a girl who has physically inactive parents.

gender				Are you physically active		Total
				yes	no	
male	Are parents physically active	yes	Count	130	8	138
			% within Are parents physically active	94.2%	5.8%	100.0%
	no	Count	77	18	95	
		% within Are parents physically active	81.1%	18.9%	100.0%	
Total		Count	207	26	233	
female	Are parents physically active	yes	Count	112	26	142
			% within Are parents physically active	78.9%	18.3%	100.0%
	no	Count	55	29	85	
		% within Are parents physically active	64.7%	34.1%	100.0%	
Total		Count	167	55	227	
		% within Are parents physically active	73.6%	24.2%	100.0%	

Table 5.8 Parents' physical activity to physical activity of respondents-Gender

Table 5.9 next page, presents similar information to table 5.8, but for urban/rural status rather than gender. Physically active parents from urban/rural areas influence their children in different ways. For instance, in the case of urban respondents, 93% stated that they were

physically active when their parents were physically active. When urban respondents stated that their parents were physically inactive, this figure fell to 72%. Results for rural respondents showed similar trends with an 83% positive response from rural respondents of parents who are physically active compared to 74% for physically inactive parents. In this case, there is a statistically significant relationship between the physical activity status of parents and children ($p < 0.001$ for urban subjects, $p = 0.024$ for rural, Pearson chi-square test).

Urban or Rural				Are you physically active		Total
				yes	no	
Urban	Are parents physically active	yes	Count	91	7	98
			% within Are parents physically active	92.9%	7.1%	100.0%
	no	Count	57	21	79	
		% within Are parents physically active	72.2%	26.6%	100.0%	
Total		Count	148	28	177	
		% within Are parents physically active	83.6%	15.8%	100.0%	
Rural	Are parents physically active	yes	Count	151	27	182
			% within Are parents physically active	83.0%	14.8%	100.0%
	no	Count	72	26	98	
		% within Are parents physically active	73.5%	26.5%	100.0%	
Total		Count	223	53	280	
		% within Are parents physically active	79.6%	18.9%	100.0%	

Table 5.9 Parents' physical activity to physical activity of respondents-Urban/rural

The findings show that parental involvement in physical activity was positively associated with their child's involvement in physical activities. For instance, when respondents indicated that their parents were physically active, the respondents displayed high levels of physical activity participation. Conversely, when respondents indicated that their parents were not physically active, the respondents' level of physical activity participation dropped. The findings were similar to other studies which found that parental involvement in physical activity can positively impact the participation levels of their child in physical activity (Kremarik, 2000; Sallis et al., 2000; Trost et al., 2003; Wagner et al., 2004).

5.3.3 Which parent is most influential

The role of the family is apparent in encouraging respondents to be physically active. In particular the role played by parents, who appeared to be the most influencing member of the family who encouraged participants to be physically active – figure 5.2 next page. Girls (42%) indicated that their mother was the main person encouraging them to be physically active. Boys on the other hand indicated that their father (38%) was the main person who encouraged them to physically active but mothers were still prominent (32%). Urban (62%) and rural (57%) responses also indicated mothers as being the greater influencing agent in the home to their physical activity participation. Fathers were not indicated as an important encouraging agent for both groups (urban 3% and rural 2%). The findings showed that parents, more so than peers/friends were the main agents who encouraged respondents to be physically active. This corresponded with previous studies which also found that parental support can be positively associated with their child's participation in physical activity (Hoheps, 2008). However, the main encouraging agent in the home as stated by respondents was the mother. This was noticeable for girls and urban/rural respondents, although boys indicated their father as the main socialising agent encouraging them to be physically active. This differs somewhat from other studies which found fathers to be the main socialising agent in the home encouraging their child's participation in physical activity/sport (Ferreira et al., 2006).

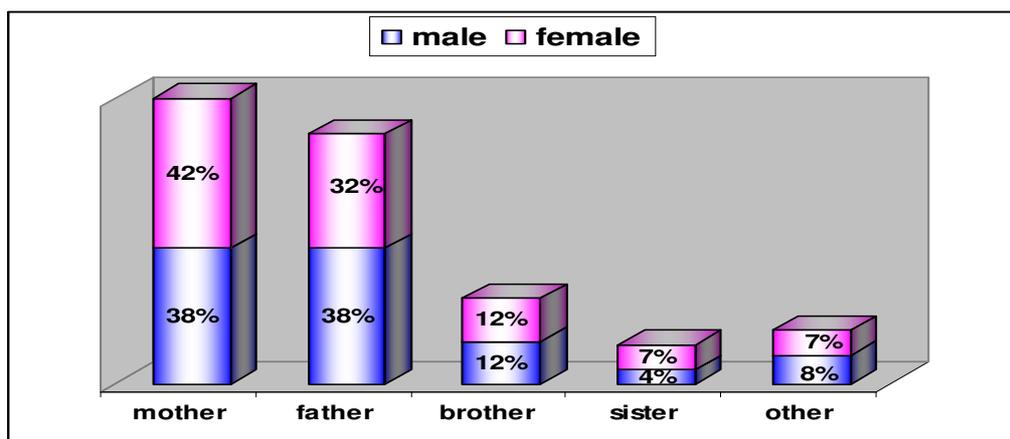


Figure 5.2 Main person in the home who encourages physical activity-Gender

In summary, in addressing the second research question; how influential are families in promoting physically active adolescents, there is a clear link between encouragement from family members who participate in physical activity and adolescents' physical activity participation. A high percentage of respondents indicated that they receive encouragement from home to participate in physical activity. Parental influence was also evident when it was apparent that when parents were physically active, respondents showed higher levels of being physically active than when parents were not physically active. This was evident in the responses of boys, girls and urban/rural groups. The most important agent in the home encouraging respondents to be physically active was the mother.

Research Question 3

5.4 What are the Physical Activity Patterns of Adolescents

This section will address the third research question: What are the physical activity patterns of adolescents? This included examining physical activity after and during school hours. The first part of this section; 5.4.1, will start by looking at physical activity after school hours and will follow with physical activity during school hours – section 5.4.2.

5.4.1 Physical Activity Patterns after School Hours

This section will examine the physical activity patterns of respondents after school hours and includes the following categories:

- Active transportation to and from school;
- Most popular physical activities after school hours;
- Most likely location for physical activity after school hours;
- Time devoted to physical activity after school hours;
- Nature of physical activity participation after school hours.

5.4.1.1 Active transportation to and from school

The most popular mode of transport to school was motorised transportation – table 5.10 next page. Cycling (2%) frequencies are low but 15% of participants claim they walk to school. In a gender comparison motorised transport is popular for both boys (49%) and girls (44%). However, the frequency of motorised travel is slightly higher amongst boys than amongst girls. In contrast more girls (18%) walk to school than boys (11%). Only 4% of the participants, all boys, cycle to school. These differences are statistically significant ($p < 0.003$, Pearson chi-square test). Similar to other studies the most popular mode of transportation taken by participants to and from school was motorised travel; car and bus, (CSO, 2003; McMillan, 2007). Active transport in the form of walking and cycling

frequencies were low, comparing favourably with previous studies which indicated low levels of walking and cycling to school (Hussey et al., 2001; Evenson et al., 2003). However, there were gender differences when it came to walking and cycling to school. Out of a total number of 235 girls questioned, not one girl indicated that she cycled to school and only 4% of boys cycled to school with any degree of regularity. In a reverse of this trend more girls appear to walk to school than boys. The findings agreed with a US study, which also reported low walking and cycling patterns to school by adolescents (Evenson et al. 2003). However, the findings differ from other studies which found walking frequencies to be low with both genders and pointed out that in general boys showed greater rates of active transport to school than girls (McDonald, 2007). This was not evident in this study where the reverse trends were found; girls showing greater tendencies to engage in active transportation than boys. In general, when both forms of transport are taken into account girls appear to be slightly more likely to engage in active transport to and from school than boys. The mode of transport to school for urban/rural participants closely follows gender responses with motorised travel the most popular form of transport, although more rural participants travel to school by bus (45% rural to 4% urban). Perhaps expectedly urban participants walk (31%) and cycle (4%) more to school than rural participants (4% for walking and none cycled). A chi-square test of association shows a statistical association ($p < 0.001$, Pearson chi-square test).

			Transport to school							
			walk	cycle	car	bus	taxi	train	other	Total
Gender	male	Count	26	9	115	72	1	1	13	237
		% within Gender	11.0%	3.8%	48.5%	30.4%	.4%	.4%	5.5%	100.0%
	female	Count	43	0	103	63	0	0	25	234
		% within Gender	18.4%	.0%	44.0%	26.9%	.0%	.0%	10.7%	100.0%
Total		Count	69	9	218	135	1	1	38	471
		% within Gender	14.6%	1.9%	46.3%	28.7%	.2%	.2%	8.1%	100.0%

Table 5.10 Transport to school-Gender

A large number of respondents live within 1 mile of their school (142 students or 30%). Despite this, the majority do not walk or cycle to school with any degree of regularity as noted above. Distance to school appeared to be a key factor for rural participants who

showed little or no urge to walk/cycle to school. Urban participants may have more of an opportunity to benefit from active transport but did not appear to avail of this opportunity. This supports the findings of Sjolie and Thuen (2002) who found that urban adolescents may be more likely to cycle or walk to school than their rural counterparts. Approximately half of the total number of participants indicated that they lived within a two mile radius of their school. Despite this, incidents of active transportation are low, contradicting studies which place distance from schools as the principle determinant on walking and cycling to school (Di Guiseppi et al., 1998; Sallis and Glanz, 2006). However, this pattern of low active transport follows similar studies which indicated incidences of walking and cycling had fallen (SPU, 2001; Department of the Environment and Local Government, 2002).

The weight of school bags may be an important factor to why respondents did not walk/cycle to school with any regularity. 50% of the respondents reported carrying between 4 and 7 books to school daily. Gender and urban/rural responses (all 50%) follow similar lines. There was no statistical relationship between genders and urban/rural groups. But it is also worth noting that carrying between 8 and 11 books (16%) was also popular. It may be difficult to establish the exact weight of a single school book however, in an Australian study it was estimated that school books can vary in weight from between 0.5kg and 1kg (Grimmer et al. 1999). If these estimates are converted to this study, the average weight of school books carried by the respondents varies from 2kg to 7kg at its heaviest. It is also worth noting that these estimates do not include accessories which also may be carried in school bags – copy books, pens, pencils, pencil case or lunch. These figures compare to Dockrell et al., (2007) who found that school bags weighed approximately 6.2kg.

Mullan (2003) noted that adolescents exposed to road traffic may form a negative perception of their safety. This was evident in the findings, when respondents were asked if they thought roads and footpaths were safe to walk/cycle to school, 67% considered roads and footpaths safe for travel – figure 5.3 next page. Gender positive responses were similar (boys 67% and girls 66%) which were not of statistical significance. Differences did occur between urban (85%) and rural (54%) positive responses to whether roads and

paths are safe for cycling/walking. This difference was statistically significant ($p < 0.001$, Pearson chi-square test). Overall a large majority of participants considered roads and footpaths safe for walking or/and cycling to school but did not engage in walk/cycling to any degree of regularity.

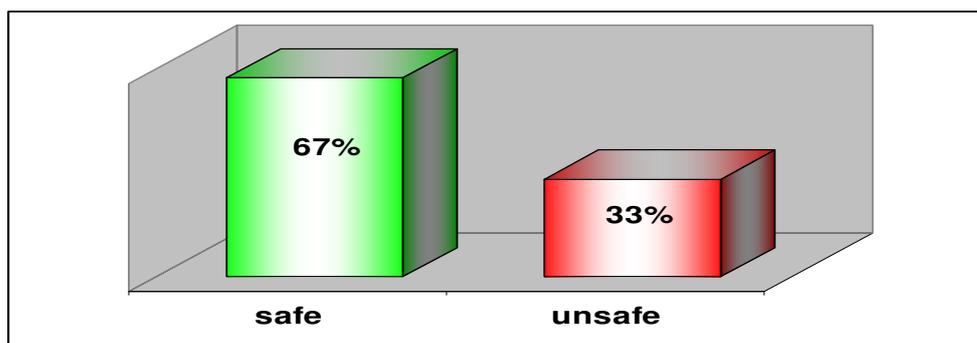


Figure 5.3 Suitability of roads and footpaths

5.4.1.2 Most popular physical activities after school hours

The most popular physical activity participated in after school hours was GAA (25%) which was by a large margin more popular than the next two activities listed – soccer (11%) and walking (11%) – table 5.11, next page. This was the case according to gender and urban/rural responses but boys and rural respondents show much higher levels of participation in GAA than girls and urban respondents. The findings correspond with other Irish studies which noted the popularity of GAA activities amongst Irish adolescents (Connor, 2003; Fahey et al., 2005; McIntyre, 2005; Department of Health and Children, 2007). As the national games of Ireland, Gaelic Games attract large numbers of young Irish people (McIntyre, 2005) therefore; the findings with regard to GAA may be a somewhat expected result. Some activities have a gender preference, for example, soccer is the second most popular activity for boys while walking is the second most popular activity for girls. Other points of interest are how some activities can be either male or female dominated. For instance, 4% of boys participate in golf, while golf did not figure as a response for girls. Instead dancing (6%) and hockey (6%) featured for girls and not for boys. The popularity of dance in particular as a popular physical activity for girls has also been noted in national and international studies (Passmore and French, 2001; Shaughnessy, 2003; Dowda et al., 2004; Department of Health and Children, 2007).

	Male		Female		Total
GAA	30%	GAA	19%	GAA	25%
Soccer	18%	Walking	17%	Soccer	11%
Running	7%	Swimming	8%	Walking	11%
Swimming	6%	Running	7%	Running	7%
Athletics	5%	Dancing	6%	Swimming	7%
Golf	4%	Hockey	6%	Personal Fitness	4%
Personal Fitness	4%	Soccer	5%	Athletics	3%
Walking	4%	Basketball	4%	Basketball	3%
Cycling	3%	Personal Fitness	4%	Dancing	3%
Rugby	3%	Tennis	3%	Hockey	3%
Training	3%	Athletics	2%	Horse Riding	3%
Basketball	2%	Badminton	2%	Badminton	2%
Martial Arts	2%	Cycling	2%	Cycling	2%
Racquetball	2%	Horse Riding	4%	Golf	2%
Other	7%	Martial Arts	2%	Martial Arts	2%
		Rounders	2%	Rugby	2%
		Work	2%	Tennis	2%
		Other	6%	Training	2%
				Other	7%

Table 5.11 Most popular physical activities after school-Gender

Similarly urban/rural respondents place GAA as the most popular physical activity after school – table 5.12. However, the level of popularity may be worth noting with a 29% positive reply from rural participants compared to 19% from urban participants. The other activities exchange positions in terms of popularity but for the most part soccer, walking, running and swimming are placed in the top five responses.

	Urban		Rural
GAA	19%	GAA	29%
Soccer	12%	Soccer	11%
Walking	11%	Walking	8%
Personal Fitness	6%	Running	7%
Running	6%	Swimming	7%
Swimming	6%	Basketball	4%
Athletics	5%	Badminton	3%
Dancing	4%	Hockey	3%
Hockey	4%	Horse Riding	3%
Rugby	4%	Personal Fitness	3%

Table 5.12 Most popular physical activities after school-Urban/rural

Additional data retrieved from activity diaries showed walking as the most popular physical activity (47%) participated in after school hours – figure 5.4. In this case the popularity of walking was ascertained according to the number of times the activity was mentioned. GAA (9%) was the second most popular activity followed by soccer (6%), physical education (5%) and running (4%). The activities listed above were also popular during analysis of questionnaires but generally GAA was the most popular physical activity overall and according to gender in physical activities after school hours.

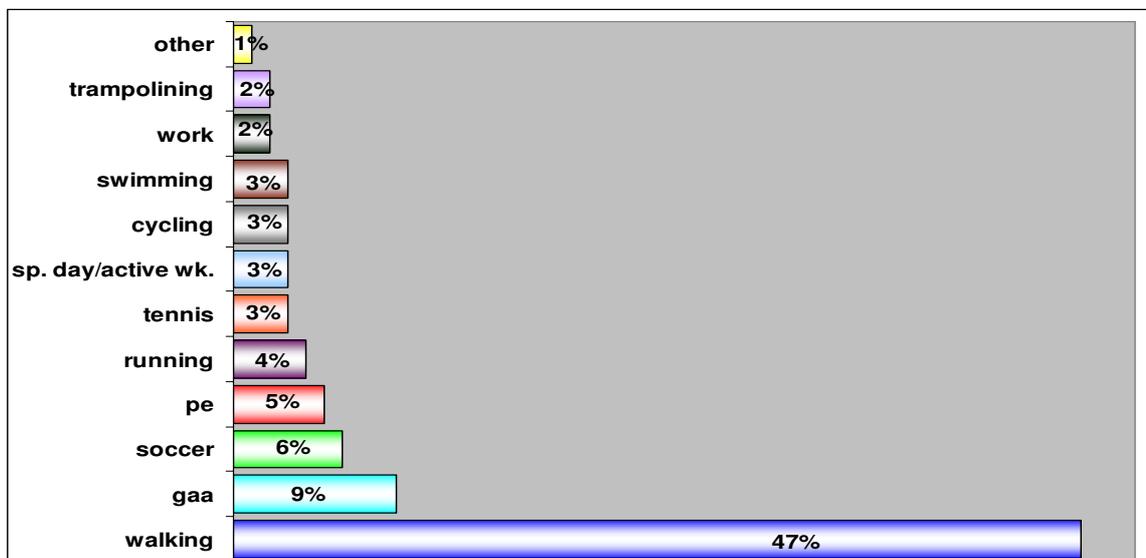


Figure 5.4 Most popular physical activities-Diaries

5.4.1.3 Most likely location for physical activity after school hours

In total, participants listed over twenty-five different sites/locations where they engage in physical activity following the variety in terms of location offered by other studies (Sallis et al., 1998; Brownson et al., 2001; Giles-Corti and Donovan, 2002; Gauvin et al., 2005; TRB, 2005). By far the most popular site used by respondents was playing pitches (table 5.13 next page) of which GAA pitches were the most popular. Although this did not match the results of activity diaries which placed playing pitches (10%) as the fourth most popular answer after footpaths (27%), the school (15%), and home (12%) – figure 5.5. The findings in some way reflect a policy document published by Sport England who stated the importance of playing pitches as a resource for facilitating a vast array of sports/physical activity (Sport England, 2008).

	Male		Female		Total
Playing Pitch	46%	Playing pitch	33%	Playing Pitch	39%
Green	8%	Park	11%	Park	9%
Park	8%	Green	8%	Green	8%
Sports Centre	6%	Gym	8%	Gym	6%
Swimming Pool	4%	Swimming Pool	7%	Sports Centre	6%
Ball Alley	3%	Tennis Court	5%	Swimming Pool	6%
Garden	3%	Sports Centre	5%	Tennis Court	4%
Golf Course	3%	Beach	3%	Ball Alley	2%
Gym	3%	Astro Turf Pitch	2%	Basketball Court	2%
Boxing Club	2%	Ball Alley	2%	Beach	2%
Running Route	2%	Basketball Court	2%	Community Centre	2%
School	2%	Community Centre	2%	Garden	2%
Tennis Court	2%	Other	12%	Golf Course	2%
Other	8%			School	2%
				Other	8%

Table 5.13 Most popular location near home for physical activity-Gender

When questioned further respondents indicated that they considered the areas listed above suitable for physical activity according to gender (boys 96% and girls 97%) and urban/rural (96% for both). Pearson chi-square analysis showed no statistical relationship between both genders ($p=0.423$) and urban/rural ($p=0.496$). Data from activity diaries showed that the most popular location for physical activity was footpaths (27%) – figure 5.5. This corresponded with the walking levels indicated as a top response in activity diaries. Many activities also occurred in the participants' schools (15%) and at home (12%). Although playing pitches was the fourth most popular response (10%) in activity diaries, playing pitches were the most popular location for physical activity reported in the questionnaires.

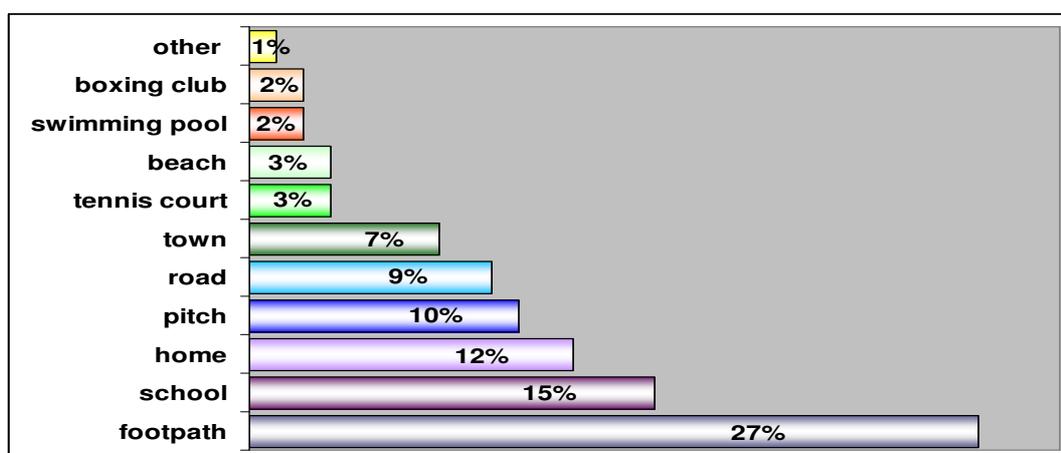


Figure 5.5 Most popular location for physical activities-Diaries

Many of the facilities listed by respondents charged them for use; swimming pools, gyms and leisure centres. But in general, the respondents thought these were not too expensive, thus did not affect their use of these facilities. Cost factors were previously found to affect adolescent physical activity (Connor, 2003) but this was not indicated in this study. A moderate majority of respondents (63%) claim facilities for physical activity within close proximity to their homes were adequate but if more facilities existed a large majority said that they would be more physically active (boys 79%, girls 84% and urban 79% and rural 84%). There was no statistical relationship between the groups, ($p=0.209$ for gender and $p=0.287$ for urban/rural, Pearson chi-square test) when asked if they would be more physically active if more facilities existed for physical activity. This was also emphasised in other studies which found that the availability of facilities can influence physical activity participation (McCormack et al., 2006; Cohen et al., 2006).

5.4.1.4 Time devoted to physical activities after school hours

Overall the mean time participating in physical activities after school is 2.32 hours per week – table 5.14. Differences are apparent between boys (2.51) and girls (2.11) with boys displaying 40 minutes longer times per week being physically active. Post Hoc analysis (Tukey HSD test) confirms boys spending longer times engaging in physical activities after school hours than girls. These differences are statistically significant ($p<0.001$, Anova). Urban (2.35) and rural (2.31) were comparable but had no statistical difference. Recommended guidelines for physical activity vary but generally twenty to thirty minutes of daily physical activity has been recommended (Wing et al., 2001; Bull, 2003; Blair et al., 2004; Gordon-Larsen et al., 2004). The findings indicated that respondents appear to meet the recommended guidelines offered by health and fitness experts.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
male	183	2.51	.844	.062	2.39	2.64	1	4
female	167	2.11	.802	.062	1.99	2.24	1	5
Total	350	2.32	.847	.045	2.23	2.41	1	5

Table 5.14 Time devoted to physical activities after school

Data from activity diaries showed that between 3 and 7 hours (32%) was the most popular time period for physical activity during the week – figure 5.6. Physical activity recommendations would point to a minimum time of three hours per week (Gordon-Larsen et al., 2004; TRB, 2005) which the majority appear to meet. 26% of participants are physically active for between 1 and 3 hours per week which might be considered low.

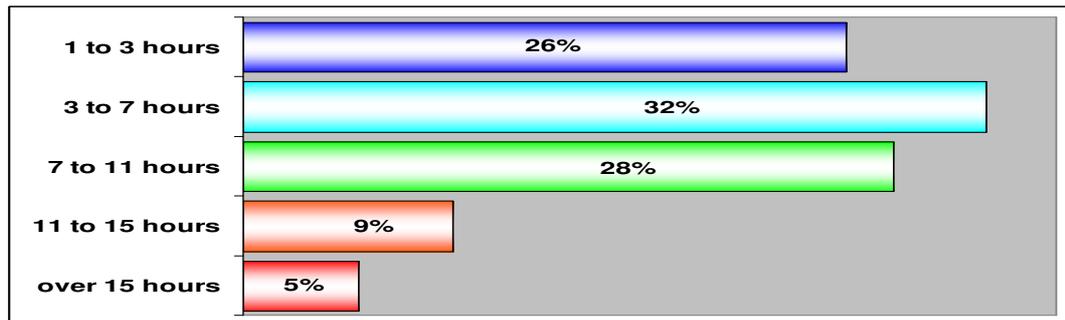


Figure 5.6 Most popular time participating in physical activity-Diaries

5.4.1.5 Nature of physical activity participation after school hours

Table 5.15 illustrates the nature of physical activity participation amongst respondents after school hours. The findings indicated that 74% of the respondents take part in physical activities with others as opposed to on their own (16%). Similarly 76% of boys take part in physical activities with others compared to 70% of girls. These gender differences were not statistically significant. Urban (76%) and rural (71%) respondents also reported physical activities with others and again these differences were not statistically significant. Other studies point to the benefits of participating with others, interlinking participation with others with casual, non-competitive physical activity, thus the opportunity for physical activity to act as a social outlet also (Mulvihill et al., 2000; O’Sullivan Ryan, 2005).

			Activities on your own or with others			Total
			on your own	with others	both	
Gender	male	Count	25	138	18	181
		% within Gender	13.8%	76.2%	9.9%	100.0%
	female	Count	29	114	19	162
		% within Gender	17.9%	70.4%	11.7%	100.0%
Total		Count	54	252	37	343
		% within Gender	15.7%	73.5%	10.8%	100.0%

Table 5.15 Background of physical activity-Gender

The majority of activity diary respondents indicated that they participate in physical activities in a casual nature (72%) as opposed to competitive (13%) or school based (15%) – figure 5.7. Casual based physical activities include activities such as going for a ‘few puck/kicks’.

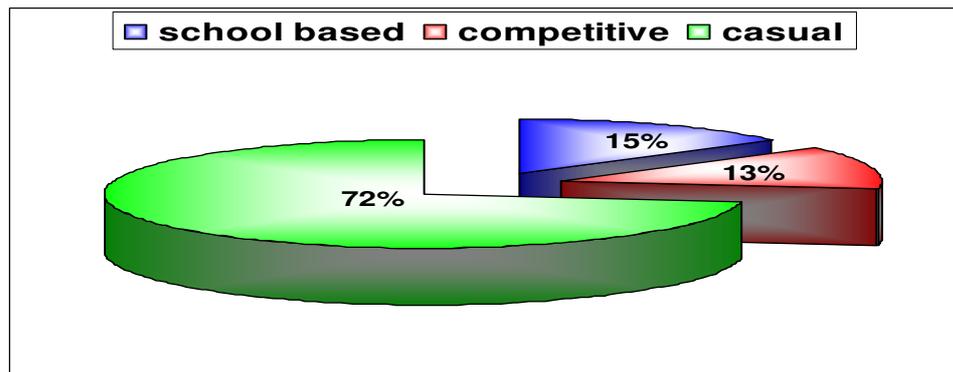


Figure 5.7 Setting for physical activities-Diaries

In summary, in addressing the first part of the third research question: What are the physical activity patterns of adolescents after school hours, there were a number of important issues uncovered. Active transportation was not popular with the respondents, despite a large number of the respondents living close to their school and the respondents considering roads/footpaths safe for use. The weight of school books may be a discouraging factor in preventing adolescents from engaging in active transport activities.

GAA activities were the most popular physical activities engaged in after school hours by respondents (gender and urban/rural) but higher levels of participation were indicated by boys and rural respondents. On the other hand, activity diaries showed walking as the most popular physical activities participated in by these respondents. Corresponding with questionnaire findings, the most popular location for physical activity according to gender and urban/rural respondents was playing pitches. Activity diaries indicated that footpaths were the most popular location for physical activity matching the high walking levels indicated in diaries. But playing pitches did feature as a top four responses. The respondents reported that they were charged for using some facilities but the majority claimed that this charge was not too excessive. The respondents also stated that they

thought they were adequately served with facilities locally however, the majority stated that if more facilities were available, they would be more physically active.

The average time spent engaging in physical activity per week was 2.32 hours, with boys showing longer times engaging in physical activities than girls. On the other hand, activity diaries indicated that the modal time engaging in physical activity per week was between 3 and 7 hours. The majority of the respondents reported that they engage in physical activity with others as opposed to engaging in physical activities on their own, perhaps indicating a competitive setting for physical activity. However, this was not seen in activity diaries which showed that casual based activities were more popular than competitive or school based physical activities.

5.4.2 Physical Activity Patterns during School Hours

This section will examine physical activity patterns of adolescents during school hours and will include the following categories:

- Involvement in Physical Education and school teams;
- Lunch and break time physical activity;
- Most popular physical activities during school hours;
- Time devoted to physical activities during school hours.

5.4.2.1 Involvement in Physical Education and School Teams

Overall the majority (92%) of the respondents take part in Physical Education but there are considerable differences between genders – figure 5.8. For instance, boys (96%) appear to have a higher involvement in Physical Education than girls (88%). Statistically these differences are significant ($p < 0.002$, Pearson chi-square test). Responses for urban/rural (92% for both) also show a high positive response level but there was no significant difference between the groups. The findings agree with other studies which also found high adolescent participation in Physical Education (Aarnio et al., 2002; Connor, 2003; Clemmens and Hayman, 2004).

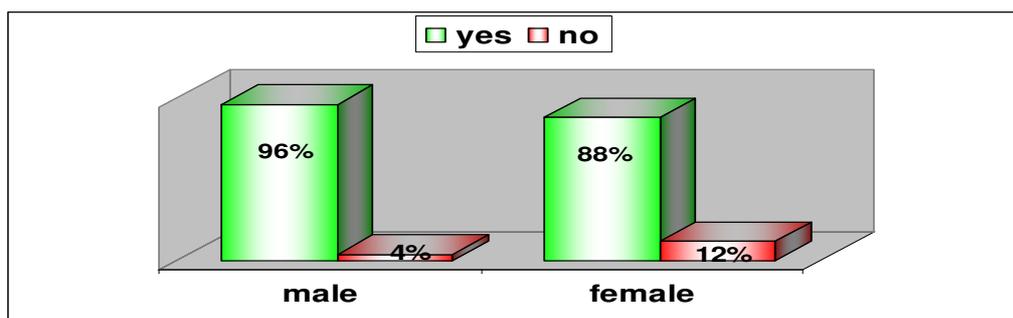


Figure 5.8 Physical Education-Gender

Although only 29 respondents said they do not take part in physical education, 45% of these did supervised study, 17% reported a medical problem while a further 10% claimed they don't like sports. Overall 84% of respondents said they enjoyed participating in physical education. However, there were gender differences, with 89% of boys reporting

that they enjoyed physical education compared to 80% of girls who stated that they enjoyed physical education. These differences were statistically significant ($p < 0.007$, Pearson chi-square test). There was no statistical difference between urban (83%) and rural (85%) participants to whether they enjoyed Physical Education.

A slight majority of respondents (54%) claim that they are involved in school teams – figure 5.9. In a gender comparison, boys (60%) have a higher participation in school teams than girls (48%). These differences were significant statistically ($p < 0.006$, Pearson chi-square test). There was only a slight difference between urban (52%) and rural (56%) respondents which were not statistically significant. The findings are similar with other studies which found that a higher percentage of boys participated in school teams than girls (Pate et al., 2000). Urban and rural participation in school teams was moderate, indicating that these findings were slightly higher than a previous study which found urban and rural adolescent involvement in school teams to be low (Liu et al., 2007).

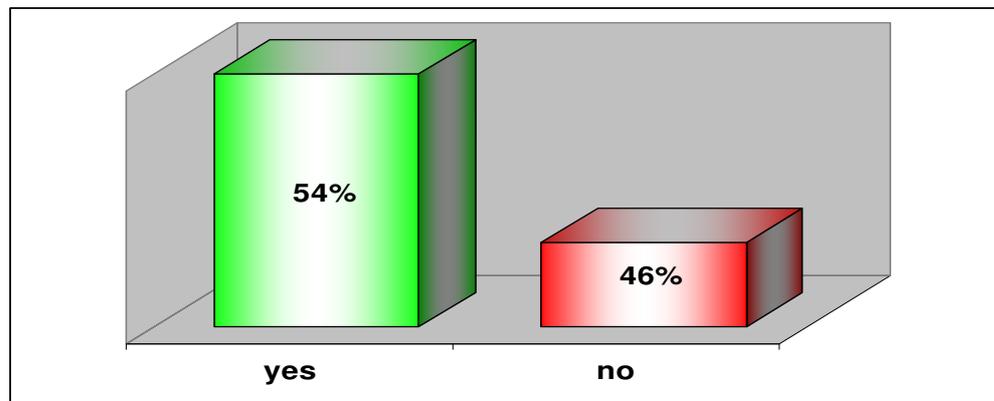


Figure 5.9 Involvement in school teams

5.4.2.3 Lunch and break time physical activity

Respondents' participation in physical activities during lunch/break time was poor with respondents not showing an inclination to use these time periods for physical activity. Overall 50% of the respondents indicated that they participate in physical activities during these time periods – table 5.16. Gender comparisons indicate that 58% of boys are physically active during lunch/break time compared to 41% of girls. These differences are

statistically significant ($p < 0.003$, Pearson chi-square test). Urban/rural physical activity during lunch/break was also similar (urban 49% and rural 50%) with no statistical relationship evident. The findings correspond with a previous study which also found boys having higher levels of physical activity at lunch/break time than girls (Mulvihill et al., 2000). Those who do not take part in physical activities during lunch/break times were more likely to talk to friends (40%) or eat lunch (25%) which concurs with other studies which also noted the popularity of students to ‘hang-out’ with friends rather than participate in something physically active (Mulvihill et al., 2000; Wills et al., 2005).

			Active during break times			Total
			yes	no	sometimes	
Gender	male	Count	131	95	2	228
		% within Gender	57.5%	41.7%	.9%	100.0%
	female	Count	92	128	2	222
		% within Gender	41.4%	57.7%	.9%	100.0%
Total		Count	223	223	4	450
		% within Gender	49.6%	49.6%	.9%	100.0%

Table 5.16 Physical activities at break/lunch time-Gender

Overall for those who did participate in physical activities during lunch/break time the most popular physical activities were walking (15%), GAA (11%) and soccer (10%). For boys GAA (18%), soccer (17%) and running around (10%) were popular while for girls walking (24%), hockey (4%) and running around (4%) were the most popular physical activities during lunch/break time. Walking was also the most popular activity amongst urban/rural respondents (both 15%). GAA and soccer were equal popularity with urban/rural respondents, exchanging positions in popularity (urban – soccer 10% and GAA 9% and rural – GAA 12% and soccer 10%).

5.4.2.4 Most popular physical activities during school hours

Overall the most popular physical activities participated in during school hours were GAA (21%), Physical Education (16%) and soccer (10%) – table 5.17 next page. In a gender comparison GAA (26%), soccer (16%) and Physical Education (15%), featured prominently for boys. For girls, physical education (17%) was the most popular response

with GAA following (16%). Some activities were more popular for girls; hockey, swimming, tennis and walking than boys.

	Male		Female		Total
GAA	26%	PE	17%	GAA	21%
Soccer	16%	GAA	16%	PE	16%
PE	15%	Hockey	7%	Soccer	10%
Athletics	8%	Basketball	6%	Basketball	7%
Basketball	7%	Running	6%	Athletics	5%
Running	5%	Soccer	5%	Running	5%
Rugby	3%	Swimming	5%	Hockey	4%
Table Tennis	3%	Tennis	5%	Badminton	3%
Volleyball	3%	Walking	5%	None	3%
Badminton	2%	Badminton	4%	Rounders	3%
Rounders	2%	Athletics	3%	Swimming	3%
Hockey	2%	None	3%	Tennis	3%
Horse Riding	2%	Rounders	3%	Walking	3%
Leis. Prog.	2%	Leis. Prog.	2%	Rugby	2%
None	2%	Other	12%	Volleyball	2%
Other	2%			Other	11%

Table 5.17 Most popular physical activities in school-Gender

Table 5.18 illustrates urban/rural physical activities during school hours with GAA, physical education and soccer the most popular, although GAA was slightly more popular amongst rural respondents than urban respondents.

	Urban		Rural
GAA	17%	GAA	23%
PE	16%	PE	16%
Soccer	10%	Soccer	10%
Basketball	6%	Basketball	7%
Hockey	6%	Hockey	5%
Running	6%	Running	5%
Athletics	5%	Athletics	4%
Volleyball	4%	Tennis	4%
Badminton	3%	Walking	4%
Rugby	3%	Badminton	3%
Swimming	3%	Rounders	3%
Walking	3%	Swimming	3%
Leis. Prog.	2%	Martial arts	2%
None	2%	None	2%
Rounders	2%	Rugby	2%
Table Tennis	2%	Volleyball	2%
Tennis	2%	Other	5%
Other	8%		

Table 5.18 Most popular physical activities in school-Urban/rural

5.4.2.5 Time devoted to physical activities during school hours

Overall the mean time of respondent engagement in physical activities during school hours was 1.94 hours – table 5.19. There were little gender differences (boys 1.92 hours and girls 1.96 hours). These differences were not statistically significant. Similarly there were little differences between urban (1.97 hours) and rural (1.94 hours) respondents in the mean time spent being physically active during school hours. These differences were not statistically significant.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
male	200	1.92	.810	.057	1.81	2.03	1	5
female	212	1.96	1.083	.074	1.82	2.11	1	5
Total	412	1.94	.960	.047	1.85	2.03	1	5

Table 5.19 Time devoted to physical activities in school

In summary, in addressing the second part of the third research question: What are the physical activity patterns of adolescents during school hours, there were valuable issues discovered. Overall the respondents indicated that Physical Education was significantly popular however, boys showed slightly higher levels of participation in Physical Education than girls. Urban and rural respondents also showed high levels of involvement in Physical Education. The respondents also stated that they enjoyed participating in Physical Education, this was shown in the overall, gender and urban/rural responses. Involvement in school teams was more or less popular amongst respondents with boys indicating a slightly higher rate of involvement in school teams than girls. Rural respondents showed slightly higher rates of involvement in school teams than urban respondents but the levels of involvement were still moderate at best.

Similarly lunch/break time physical activity was also modest. Boys showed more of an inclination to participate in physical activity during lunch/break time than girls. Urban/rural responses were also moderate. Overall the most popular physical activities participated in by respondents who indicated they were active during lunch/break time were walking, GAA, soccer and running around. For boys GAA and soccer were indicated as

the top two responses, while for girls walking and GAA were the most popular. The most popular alternative to physical activities at lunch/break time were talking to friends and eating lunch.

Participation in GAA, Physical Education and soccer were indicated as being the most popular activities participated in during school hours by the respondents. GAA, soccer and Physical Education were the top three responses for boys, while Physical Education, GAA and hockey were top three responses for girls. Some activities were more popular amongst girls – hockey, tennis, swimming and walking, but did not feature as a response for boys. Urban/rural responses also followed in line with overall responses but GAA featured slightly higher amongst rural respondents. The mean time involved in physical activities during school hours, as indicated by respondents was 1.94 hours. Gender and urban/rural responses also follow in line with this figure.

Research Question 4

5.5 What is the Role Played by Local Authorities with regard to provision of Funding, Planning and Facilities in Physical Activity

This section will address the fourth research question: What is the role played by local authorities with regard to provision of funding, planning and facilities in physical activity? For confidentiality purposes the towns will not be named but the name of a town will be replaced with an asterisk so a reader will not be able to identify any of the three towns. Three individuals were interviewed and these interviewees had a combined total of 89 years of employment and had all held various previous positions within local government.

5.5.1 Funding

Development Contribution Schemes provide local authorities with the majority of their annual funding. One of the interviewees explained the importance of the scheme in detail. **“The reference I made where we can provide capital fund I think that’s relevant because this now is the case in all local authorities. The government in 2004 introduced what they call Development Levies which means that if you’re a developer building a house in * and you’ve got permission for forty houses a levy will be attached to each house. This is called a planning levy. And that levy typically for a standard house, that’s say, fourteen hundred or fifteen hundred square feet could be as much as €4,000/€5,000, as a planning levy that you must pay”**. Similarly another interviewee acknowledged the importance of this fund, referring to the levy as a **“planning contribution”** which is available to the Council for amenity provision. Development contribution schemes therefore fall under capital expenditure being created on the establishment of an asset (Callanan and Keogan, 2003; Department of the Environment, Heritage and Local Government, 2007a). Department of the Environment recommendations stipulate that local authorities must put into practise a development contribution scheme to generate finances for the development of public infrastructure and

facilities (Department of the Environment, Heritage and Local Government, 2003). Lottery funding was also indicated in interviews as a source of income for local authorities. However, although interview officials acknowledged Lottery funding, it did not appear to be as important as development contribution levies.

But when it comes to local authority facilities, they are provided as public facility/amenity, in many cases operating at a loss, as one representative put it in regard to a Local Authority Sports' Centre **“we run it at a loss but it's not a substantial loss now but it's a loss without a shadow of a doubt”**. But another representative told of how the local authority he represented had attempted to overcome this, **“in the * context we've actually decided, we're going to run it (new swimming pool and leisure complex) ourselves but not like the old system, we've set-up a company and the company will be the employer”**. Later the same representative added that the purpose of setting-up a company to manage its new leisure complex was in the hope that the facility could operate at a profit. **“Hopefully we wouldn't have to put too much into subsidising it. We'd hope obviously that in the first couple of years that you'd be making money”**. A funding provision is provided annually in Town Councils' annual budgets to provide funding for projects. The level of funding allocated by local authorities will vary depending on the cost and size of projects. When it comes to the allocation of funding **“the elected members of the council based on advice from council officials (usually the manager)”** decide where money will be allotted.

When local authority finances were examined previously (Thurles figure 3.2; Dungarvan figure 3.4 and Youghal figure 3.6) it is clear that the three local authorities in this study show higher financial expenditures than incomes (Department of the Environment, Heritage and Local Government, 2007a). This places a burden on local authorities with regard to providing funding for services. With the collapse of the Irish economy and a reduction in the number of new houses being constructed and bought, declining development contribution revenues in turn can be expected to affect local authority provision of recreation and amenity in Ireland similarly to what occurred in Scotland (Kit Campbell Associates, 2001). Previously grant schemes did exist to provide clubs with financial aid emphasised by one representative stating that **“we provide grant aid to the**

juvenile sections of the Soccer Club, Rugby Club, Athletic Club, Tennis Club and the Pitch & Putt Club". But the level of future funding from grants to sporting organisations locally may also be affected with reductions in revenue generated. All three local authorities surveyed provide and distribute funding towards sport/recreation and leisure.

5.5.2 Planning

Other studies noted the trend of local authorities being more likely to plan for land use policies (Worthington and Dollery, 2000) which was indicated in the findings with recreation and amenity; sport/physical activity, being generally referred to within development plans. Interview officials indicated that development plans are **"broad brushed with physical activity provision"**. Generally development plans from the three towns' surveyed detailed policies and strategies on what councils wish to achieve in the future. One representative stated that **"our plan would be our development plan which would be a general plan for the town"**. Another official spoke of an emerging trend with regard to designing their Development Plan. **"We're consulting with all the sporting organisations about their future needs and, having regard to their future needs and what they currently have, we will see that the Development Plan process will plan for their future needs. In other words, when we start zoning for * for the next six years we will be taking account play and recreation needs. And as well as zoning land for housing, I hope we'll arrive at a point that we'll equally be zoning land for housing, we'll be zoning land potentially for *(GAA club) or for *(soccer club)"**.

Another representative spoke of using the development plan for the purpose of sport/physical activity provision **"that it's an aspiration of your development plan to preserve the existing ones (facilities) and to provide and fortify, facilitate the provision of new and I suppose ever changing ones because the needs are changing"**. While the third representative repeated this theme, **"through the Development Plan process if you identify what you need, there's a vehicle then get the councillors to accept the policy and then you come up with a vehicle to fund it"**. The interviews also showed that although planning strategies may be drawn towards land use policies, recreation and

amenity (sport/physical activity) is included within these plans thus providing a community related function. This view of encouraging local authority planning to having a community related function was also mentioned in other studies (Worthington and Dollery; 2000).

Previous studies have outlined the importance of providing public open space for the benefit of the community (Ewing, 1997; Glaeser and Kahn, 2003; Wu and Plantinga, 2003). Providing public open space is a prerequisite requirement placed on developers of new residential housing projects by local authorities. Prior to the commencement of housing projects developers would meet council officials to discuss their proposed plan. **“They’d meet you before, they come in with a preliminary design that they think would work and in general terms you’d be looking for one large open space that could be what you call the focal point and where if they (kids) wanted to play ball or run around”**. This follows the guidelines which have been set down by departmental recommendations in the provision of an area for public open space in new housing developments (Department of the Environment, Heritage and Local Government, 2008). These guidelines insist that open space provision must be provided and be 15% of the total under development (Environment, Heritage and Local Government, 1999). **“All plans must give 15%, now it has to be usable open spaces. We can’t have 15% of stupid pockets. You want to have a place where fellows can play ball. Now you can have little pockets dotted around for them, just to soften the place. But I mean they’re all fairly standard, any architect would know and they would be standard”**. This search for functional open space provision for play/physical activity, as indicated in interviews, was also expressed in other studies (Ward Thompson, 2002; Ewing et al., 2003). Interviews revealed that developers would not be allowed to decide what to provide with regard to open space. **“Well look the answer to that is no. No. Very definite. They have to meet the standards laid out in the National Guidelines and the policies set out in the Town Plan or the County Development Plan”**.

Once a housing development has been completed a process occurs to ensure the developer has followed the guidelines of the planning permission. **“A developer would write into us and ask us to take the property in charge. Which means that we take over the**

maintenance of roads, footpaths, sewage, water, surface water, green areas and maintenance and maintenance of same. He'd submit as constructive drawings which effectively should be the same as what he got permission for unless during construction he found some reason to change something and by consent it could be done". But one representative noted that **"You'd hope nine times out of ten they'd build in compliance with their permission. Periodically that doesn't happen"**. If a developer did not follow the agreed planning permission **"they wouldn't get a letter from us (Town Council) and they can't sell their houses then if they don't comply with their permission"**. But should a developer not follow the guidelines of the planning permission, the process would begin with a review of the new development by an engineer or a planner and would result in the council writing to the developer issuing a warning for not following the planning permission. **"If he didn't respond we'd issue an enforcement letter which would tell him what to do, to comply and then if he didn't respond to that, then we'd serve court proceedings on him. If we get a real rogue who doesn't engage with us he'll end up in court and he'll answer before the justice"**.

In a sports/physical activity provision context the role played by sports partnerships in the towns surveyed was noticeable. As one representative put it **"the policy on physical activity in a loose sporting context has been handed to what we call sports partnerships"**. All three town councils had worked with sports partnerships, although not directly or officially but through elected members' representation on county councils (county councils operated directly with sports partnerships). As another representative summarised it **"a link has been established between * Town Council and * Sports Council (partnership) but this is an informal relationship. * Sports Partnership operates on a formal level with * County Council and * * Council but * Sports Partnerships functions as a stand alone organisation. A communication link exists between * Sports Partnership and * Town Council to allow both parties to talk openly to the other but it operates at an informal level"**.

5.5.3 Facilities

All three interview officials were of the opinion that local authorities had an important role to play in providing facilities suitable for physical activity in their respective towns. One representative stated that **“traditionally we’ve provided them (facilities) for leisure centres ... Town Parks ... and in some areas local authorities might provide playing fields”**. The other interviewees also mentioned their local authority’s provisional role particularly in relation to leisure centres. But other facility provision was also stated. For example, walking and cycling routes, parks, boxing club and pitch and putt courses. But in general it appeared that other bodies also played a huge role in physical activity provision. Summed up by one representative who stated that **“the voluntary sector in Ireland does that (provide playing pitches) the GAA being the best example of every parish having its own field and in some parishes three and four fields and three to four clubs”**. The importance of voluntary organisations and the role played by the GAA in particular with regard to provision of facilities locally, was also found in other studies (Connor, 2003; Hoye and Cuskelly, 2003; Delaney and Fahey, 2005). However, two of the officials thought that the role of local authorities had moved somewhat from providing direct facilities to a more planning/zoning role. **“I would think we have a very large role to play (in physical activity provision), primarily I suppose from a planning point of view we have to zone areas as amenity, and that’s our primary role ... that you at least put it into your Development Plan”**.

Statutory obligations do not require local authorities to provide facilities for adolescents other than for housing if a child/adolescent was sleeping roughly on the street. All three representatives were unanimous in stating that they felt the towns where they officiated were well catered for in terms of physical activity facilities. But one official added that although his/her town was well catered for in terms of facilities and although the town council did provide a large array of facilities, provision was **“probably not directly by * Town Council”**. Local authorities were not involved in managerial decisions affecting physical activity facilities aside from operating playgrounds, sports centres and zoning, in general local authorities did not have direct managerial involvement in facilities.

Two interviewees reported that they had been approached by adolescents to provide skateboard parks. One interviewee continued by saying that there was “quite a **strong lobby and very much led by young people**”. But the other interviewee stated that “**adolescents themselves have never actually approached us but the Youth Club had**” seeking improvements in their facilities. This sentiment was also echoed by some adolescent respondents. Overall 6% (4% of boys and 7% of girls) had approached their local authority seeking the provision of a certain facility. There was no statistical difference between the genders. Likewise, a small percentage of urban/rural respondents approached local authorities seeking facilities (urban 8% and rural 4%) which was not statistically significant ($p=0.061$, Pearson chi-square test). Facilities for sport/physical activity were the most sought after facility according to gender (63%) and urban/rural (61%) respondents. When these data were analysed using a Pearson chi-square test, there were no statistical relationships for gender ($p=0.384$) and urban/rural responses ($p=0.079$). The most sought after facility which the respondents felt was needed locally was a swimming pool (16%) – table 5.20. Interestingly 7% thought there were enough facilities in their local area for physical activity.

Swimming Pool	16%
Gym	9%
None	7%
Youth Centre/Teen Facility	6%
Basketball Court/Club	6%
Tennis Court/Club	6%
Track and Field Area	6%
Dance Studio	5%
Park	5%
Soccer Pitch/Club	5%
Ball Alley	3%
GAA Pitch/Club	3%
Skateboard Park	3%
Astroturf Pitch	2%
Bowling Alley	2%
Golf Course/Club	2%
Green/Open Space	2%
Ice Skating Rink	2%
Sports Centre	2%
Other	8%

Table 5.20 Facilities needed locally

When further asked what facilities the officials thought adolescents may like to see provided in the future, responses varied between a **“hang-out/drop-in facilities”** for social needs to sports specific provision of running/athletic track. This was emphasised by one representative who stated that in terms of sport/physical activity, **“there’s probably a need for more creative thinking about what young people need in terms of sport and activity going beyond the traditional Gaelic Games. For instance, we should have an all weather running track in the town of *’ size so that an individual or an adult can, if they want to go for a half hours exercise on a track. If you went to Germany you tend to find these kind of places (running tracks)”**. All three local authorities surveyed do provide certain facilities towards sport/recreation and leisure for their community.

In summary, in addressing the fourth research question: What is the role played by local authorities with regard to provision of funding, planning and facilities in physical activity, numerous issues were developed. With regard to funding, development contribution schemes provided local authorities with a vast amount of their annual funding. The scheme aimed to place a tariff on developers to provide capital for local authorities to use for public services. During the period of economic growth in Ireland, from the mid 1990s to the mid 2000s, this resulted in much new residential housing. In turn this resulted in development contribution levies which at the time were considered a major source of income for local authorities. However, in light of the recent decrease in housing developments this may reduce the amount of funding available to local authorities for public amenity use. Although lottery funding was indicated as a source of funding for local authorities, this source of funding did not appear to be as prominent as development levy contributions. Local authority operation of facilities appears to be hampered with the possibility of facilities operating at a financial loss, particularly in the area of recreation and amenity. This was expressed in interviews, but rather than providing facilities solely for public use in hope, rather than expectation, of operating as a profitable entity, local authorities were attempting to be proactive by introducing different managerial approaches to administer facilities. Funding provisions are provided for in town council budget estimations with elected councillors deciding how funding is allocated and Town Managers deciding where the money will be allotted.

Local authorities do not prepare specific planning actions for sport/physical activity. Development plans contain broad strategies dealing with sport/physical activity. It was established during the course of interviewing that development plans would outline existing facilities and then plan to provide and secure the future of facilities to mirror the ever changing needs of the public. Indeed in a measure to plan for recreation and amenity (sport/physical activity) in the future, one local authority went to the extent of questioning all sporting clubs in their administrative area to ascertain these clubs' current position (numbers they are catering for and their facilities) and the clubs' future needs (how many individuals they may cater for in the future and the facilities they would therefore need in the future). The aim of this initiative was that in time should sporting clubs need to expand (need more space), local authorities would ensure that adjacent land would not be zoned for residential, agricultural, commercial or industrial use. Private developers must provide public open space in residential housing developments comprising of 15% of the total area under development. This provision is a statutory condition, assigned before developments begin, with penalties imposed preventing the sale of houses or ultimately court proceedings imposed on the developer.

Officials were of the opinion that local authorities have a role to play with regard to providing facilities for sport/physical activity such as swimming pools, parks, open spaces and playing pitches. However, the consensus of opinion was that rather than providing directly for sport/physical activity, local authorities have now moved towards facilitating sport/physical activity through zoning areas for amenity. In turn, it was noted that there were other groups locally who are important elements in local sport/physical activity provision; voluntary organisations, in particular the GAA. Similarly local sports partnerships were also indicated as being involved in the provision of sports/physical activities locally with a communication link existing between both organisations, albeit an unofficial link.

Local authorities appear to have also moved away from direct managerial involvement in sport/physical activity facilities but would provide grant schemes to sporting clubs/organisations. Interview officials also indicated that in their knowledge, adolescents

had approached town councils seeking the provision of sports/physical activity facilities. In turn, a small percentage of adolescent respondents indicated that they had approached their local authority seeking a facility, with sports/physical activity facilities featuring prominently on required items. However, it was noted that statutory requirements do not compel local authorities to provide facilities for youth/adolescents other than housing. Officials reflected that more creative thinking was needed by local authorities in recognising the needs of the adolescent population, especially in regard to sports/physical activity needs where it was stated that officials felt there was a need for all weather athletics facilities needed in their area of administration.

Chapter Six - Conclusion and Recommendations

6.1 Introduction

This study had twin aims; to examine adolescent physical activity patterns and the role played by local authorities with regard to providing facilities for adolescents to become physically active. Contained within these basic aims were four research questions which examined:

- Adolescent respondents' interest in physical activity participation;
- The influence of the family in encouraging adolescents to be physically active;
- Physical activity patterns:
 - After school hours;
 - During school hours.
- The role played by local authorities in the provision of:
 - Funding;
 - Planning;
 - Facilities.

6.2 The level of interest of Adolescents in Physical Activity

This study indicated that adolescent respondents are interested in physical activity participation. The vast majority of the respondents considered themselves to be physically active and membership of sports clubs and physical activity participation after school hours were indicated as being high. Similarly physical activity/sport was indicated to be more popular than participation in other sedentary activities. However, boys appeared to be slightly more interested in participating in physical activities than girls. Declines in physical activity were found as adolescent respondents progressed in age.

6.2.1 Recommendations to enhance adolescent interest in physical activity

Declining physical activity levels can be an expected and likely occurrence during adolescence, as those in early adolescence may have more time to engage in physical activities when compared to older adolescents. Older adolescents are exposed to Junior and Leaving Certificate examinations and as they move through the education system and studying may restrain the time available for physical activity. By continuing to third level education and yearly college examinations, a pattern of physical inactivity may have developed during adolescence. Therefore, young people need to be exposed to an array of physical activities/sports during adolescence which promote not only the benefits of being physically active but are enjoyable and socially inclusive. This exposure to physical activities/sports should include children and target early adolescents, in particular girls. The purpose of this would be to avoid a situation where members of this group would withdraw from physical activities and would require strategies to 're-win' them back to a physically active lifestyle. It may be very difficult and expensive to reverse trends formed during these relatively formative years.

Adolescents need to be encouraged to participate in physical activity for at least twenty minutes daily from an early age and must also be made aware of the recommended physical activity guidelines set down by health and fitness professionals. A potential strategy would be to encourage the benefits of activities such as walking or jogging for thirty minutes as opposed to the harm caused by sedentary activities. These benefits can include being physically active to relieve stress, exercising out in the open air and taking time out from studying/working.

Activities such as GAA and soccer are popular amongst the wider adolescent population but other activities such as dance, rollerblading and walking have real benefits and are particularly popular for girls. Therefore, these activities should have a larger importance placed on them to support girls' participation in physical activity. Membership of sports clubs was generally popular but membership of some sports was dominated by boys. For instance, golf was not shown as a sports club joined by girls. Therefore, the onus must fall

on national organisations to require local clubs to arrange programmes to assist girls to their sport. For instance, in the golf scenario the Golfing Union of Ireland should ensure local golf clubs run camps locally for children to introduce them to the sport or face consequences such as not being allowed to enter official Golfing Union of Ireland events.

6.3 How influential are Families in Promoting Physically Active Adolescents

This study showed how important family members are in influencing/encouraging adolescent respondents to be physically active. Boys who received encouragement from home were 2.9 times more likely to be physically active than boys who did not receive encouragement from home. Girls also showed similar trends to boys; girls who received encouragement from home were 3.4 times more likely to be physically active than girls who did not receive encouragement from home. A large number of respondents indicated that they received encouragement to be physically active from family members rather than friends and others. Of particular importance is the role played by parents, as it was indicated that when parents were physically active their child would be more likely to be physically active. For instance, when boys indicated that parents were physically active, they were 3.8 times more likely to be physically active than boys whose parents were physically inactive. Similarly, when girls indicated that their parents were physically active, they were 2.3 times more likely to be physically active than girls who indicated that their parents were physically inactive. According to respondents the most influencing member of the family who encouraged them to be physically active was mothers.

6.3.1 Recommendations to aid family participation in physical activity

It is important to facilitate entire families in physical activity/sport participation. For instance, the introduction of lower membership schemes can allow parents and their children the opportunity to become physically active together. Family membership schemes do exist but the cost of two parents and two children can still be excessive, thus preventing all the family from joining. Therefore, there should be a national incentive in

publicly operated facilities which cater for physical activity/sport offering a decremental decrease in the cost of family membership as the number of children joining increases. Similarly these facilities should offer 'family only' times for the benefit of all the family. Other potential options would be to incorporate the activities of the child with the activities of the parent. For example, parents bring their child to playgrounds to play but while the child plays the parent may act as an observer. This could be addressed by facilitating playgrounds with sit-up benches, chin-up bars and balance beams hence allowing the parent to get active at the same time as his/her child. This type of arrangement has been successful in European countries and recently provided in New Ross, Co. Wexford.

6.4 What are the Physical Activity Patterns of Adolescents

The physical activity patterns of adolescents were examined by dividing the category into two parts; physical activity patterns after school hours and during school hours. The first part examined physical activity patterns after school hours.

6.4.1 Physical Activity Patterns after School Hours

Overall active transportation was not popular amongst respondents in this study with motorised travel the most popular means of commuting to and from school. This was found despite a notable percentage of respondents living within one mile of their school and that the majority of respondents did not think roads/paths were unsafe for cycling/walking. However, this did not appear to influence their decision to walk or cycle to school with any degree of regularity. The weight of school books is important. Carrying between four and seven school books was the most popular response, potentially varying the weight carried in school bags from 2kg to 7kg not including copy books, pens and other items which may need to be carried to school.

GAA activities were the most popular physical activities engaged in after school hours but higher levels of involvement were indicated by boys and rural respondents. The most

popular location for physical activity according to respondents was playing pitches which could cater for the majority of the physical activities listed by the respondents. Although the respondents were charged for using some facilities, this charge was not excessive. However, if more options/facilities were available, the respondents claimed they would be more physically active. The average time spent engaging in physical activity after school hours per week was 2.32 hours, with boys displaying that they engage in physical activity for 40 minutes longer during the week than girls.

6.4.1.1 Recommendations to aid adolescent participation in physical activities after school hours

Walking and cycling to school as a form of active transportation appears to have faded away. Cycling in particular was not mentioned as a popular physical activity in any category – most popular physical activities during and after school, sports club membership or active transportation to school. There are numerous strategies needed to be put into action to address this. For instance, by controlling traffic entry within a certain predetermined distance of schools, this would encourage adolescents to walk the remaining portion of the distance. However, the cooperation of the school would also be necessary in having a certain amount of supervision to ensure students can walk safely to their school. Similarly with regard to cycling, a programme of tutored cycling where adolescents could cycle in groups with designated leaders may be beneficial. However, the provision of adequate cycle paths would be necessary for this programme to operate properly. The voluntary sector performs a vital role in providing playing pitches but other locations for physical activity are needed such as skateboard and rollerblading areas.

6.4.2 Physical Activity Patterns during School Hours

Overall respondent participation and enjoyment of Physical Education was very high but boys displayed higher levels of participation and enjoyment of Physical Education than girls. Participation in school teams was moderate (54%) but again boys displayed higher levels of participation in school teams than girls. The break periods during lunch/break time were not being used for physical activity by the wider population of respondents. Of

those who do participate in physical activity during this time, boys showed higher levels of participation than girls. Walking, GAA and soccer were the most popular physical activities participated in by those who participated in physical activities during lunch/break time. Some of these activities also featured in the most popular physical activities during school hours, with GAA, Physical Education and soccer featuring for both boys and girls. The average time participating in physical activity during school hours was 1.94 hours per week.

6.4.2.1 Recommendations to aid adolescent participation in physical activities during school hours

Although respondents indicated that they participate in Physical Education and participate in physical activities during school hours, some activities do not venture beyond traditional sports provided by schools. Sports such as GAA, soccer, hockey, basketball and volleyball were popularly referred to in this study as activities during school hours which may be considered traditional school sports/physical activities. In turn activities such as dance, rollerblading and skateboarding may not be available for adolescents while in school. Therefore, personnel in schools involved in the delivery of sports/physical activity may need to assess the needs of their students rather than what is convenient for the teacher. This would also require the Department of Education to support new initiatives to promote marginalised sports/physical activities.

Participation in physical activities during lunch/break time was not as popular as maybe it should have been. A factor may be that the facilities in the schools surveyed were not being fully utilised by respondents for physical activity participation despite the majority of these schools having excellent facilities suitable for sport/physical activity. The sports facilities of the schools surveyed were highlighted previously (Thurles pg. 67; Dungarvan pg. 70 and Youghal pg. 73). Similarly respondents reported that they are physically active during school hours for less than 2 hours each week which may be a little low when compared to the facilities available. Therefore, schools in conjunction with the Department of Education should encourage their pupils to use break periods for sport/physical activities

by allowing pupils to use school equipment and facilities under supervision. This may result in longer weekly periods being physically active.

6.5 What is the Role Played by Local Authorities with regard to provision of Funding, Planning and Facilities in Physical Activity

Development contribution levies were expressed as being major sources of finance for local authorities, more so than Lottery and other sources of funding. But this source of funding is now at risk with the decline of the construction industry in Ireland. This places programme group six – recreation and amenity, in further financial jeopardy as other services have already taken priority and are sure to obtain even more priority and financial assistance in the near future. With finances already stretched, local authorities often operate facilities such as swimming pools at a financial loss and also provide grants to local sports clubs which may also be affected in the near future. Local authorities do not plan specifically for sport/physical activity although Development Plans are used for this purpose, even if not in a precise manner. However, Development Plans can and are being used for sport/physical activity through zoning by ensuring adjacent land to sports clubs is not zoned for commercial, residential or other land uses.

Public open spaces are provided for in planning applications with stipulations specified in advance and penalties enforced if they are not suitable. Local authorities do provide facilities for physical activity such as parks, playgrounds and swimming pools. However, their provisional role is limited and local communities also require voluntary agencies such as clubs – GAA, soccer, tennis and basketball, and also local sports partnerships to support their recreational needs. A small number of adolescent respondents have taken steps to approach their local authority in search of the provision of a facility. In a sports/physical activity context swimming pools were the most sought after facilities by adolescents but in a social context drop-in-centres were wanted by adolescents.

6.5.1 Recommendations to aid local authority provision of physical activity

Local authorities may need to address losses of income which already exists and are sure to increase in the coming years. For instance, local authorities provide grant aid to local clubs and often carry the cost burden of operating swimming pools, if their income is further lowered the funding available to clubs and for management of swimming pools can be expected to be reduced. As a result the clubs may not be able to cater for their members or pools may not be maintained adequately. Therefore, local authorities may need to a change their thought process with regard to acquiring funding for sport/physical activity within communities. For instance, there may be a need to introduce fund raising incentives such as local lotteries and raffles for local sport/physical activity. In other words inform the people that the lottery or raffle is for sport/physical activity and is for their benefit. Another incentive would be to include a ‘pave the way for sport’ scheme in which local people, either individually or families would be asked to purchase a cement brick which would have their name detailed on. This brick would then be used in the construction of a climbing wall in a sports’ facility for all to observe. Or similarly the name of the donor would be etched on a plaque which would be secured to the wall of a local authority facility denoting the person/persons contribution as benefactor.

All local authority services and facilities need to be monitored to ensure that they are adequate in meeting public needs. For example, if aqua aerobic classes are being offered in a local authority swimming pool and is not being supported in terms of numbers, the local authority needs to find out why this has occurred and if the activity is not popular allocate the time for another water based activity that may attract users.

Further preplanning stipulations are needed with regard to public open space provision to ensure developers present standard open spaces in residential housing areas. For example, there should be an area for children to engage in ball games and there should also be a prepared area in all estates for swings and slides for younger children. These should be co-managed by local authorities (maintenance) and residents (keeping the area tidy and reporting vandalism).

At present local authorities cannot fully cater for sport/physical activity being restricted financially and in terms of priority given. This has allowed private enterprises an opportunity to provide facilities. However, local authorities can ensure that developments are adequate for physical activity by ensuring that new developments include an amenity for sport/physical activity. For example, when developers are constructing a new shopping complex, the local authority should insist on a large area for sport/physical activity within this development. This area should be large enough to cater for an array of sport/physical activities and would be subsidised by charging users. For instance, the facility could be used for rollerblading for one hour, indoor soccer and basketball when required.

Physical activities such as cycling may vanish as a means of transportation unless people are enticed to the activity. With roads overloaded with motor vehicles and safety issues attached to cycling, local authorities may need to intervene to ensure a safe area exists for cycling. This could be achieved in numerous manners, for example, if the local authority was in possession of an area such as a car park within town boundaries, this area could be closed to motorised traffic on Sundays for a three hour period for cyclists.

6.6 Conclusion

Children and adolescents need to be exposed to a wide range of activities and given the opportunity to identify physical activities which are best suited for them on the basis of what activities are most enjoyable and which are freely available. If physical activity participation does not fulfil these conditions children and adolescents may withdraw from physical activities in favour of sedentary activities and an inactive lifestyle. A forward thinking proactive approach is needed to assess adolescent interests in physical activity and not what adults think adolescents would like. Although restricted in what they can provide with regard to sport/physical activity, local authorities do play a role in the provision of recreation and amenity services. Their role may no longer be as a direct provider but as a body that identifies the void in terms of what is not available for sport/physical activity and then putting a plan into action to address this void.

6.7 Recommendations for Future Studies

This was a small scale study to determine the physical activity patterns of adolescents and the role played by local authorities in provision with no attempt to draw general conclusions from the data but aims to represent the voice of adolescents in three Irish towns into their physical activity needs.

- The findings do bring to light the necessity for further research in the area as physical activity patterns are difficult to ascertain. Questionnaires and activity diaries are helpful but further aids such as heart rate monitor (intensity) and pedometers (steps/distance) in conjunction with a more select group of adolescents to provide more non-reactive data.
- Further research may also be required to examine in more detail some of the patterns observed in this study. For example, boys appear to be more active than girls and elements of physical activity participation differed between urban and rural participants therefore, further research may also be needed to address the reasons for these trends.
- The influence of schools and the facilities within schools could be examined in greater detail to ascertain whether facilities in school are being fully used not only for pupils to use but for the use of the greater population.
- Another potential future study in the area of physical activity participation of adolescents would be to examine and compare the differences between participation levels in all boys' schools, all girls' schools and mixed schools.

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Appendix A – Letter to Local Authority

Dear manager,

My name is Walter Doyle and I am currently completing a Master's degree by research in Waterford Institute of Technology. I plan to conduct a survey into the provision of facilities suitable for physical activity and subsequently the physical activity interest and participation of adolescents in your area. This is an integral part of a Masters thesis and will constitute the first phase of my research.

This phase had been designed with the intention of interviewing three town managers of three similar sized and populated towns and question them on areas related to the provision of physical activity facilities suitable for adolescents in their towns. I am writing to you in the hope that you will allow me to conduct an interview with you, which comprises approximately thirty questions which should take about thirty five minutes to complete and will be recorded on a Dictaphone.

The results of this study will be compiled in a thesis however; no individual or town will be mentioned by name and data received will be strictly confidential and will only be accessible by myself. I plan to forward a typed transcript of the interview to you once the data has been analysed. I would also be prepared to meet with you again following the forwarding of the transcript should you need to query the results if required and if you need to contact me before then, my contact details are outlined at the end of this page. I would be very grateful if you would consider my request.

Yours sincerely,

Walter Doyle.

Mobile Number: 087 9180065, E Mail: dialwalt@gmail.com

Appendix B – Letter to Board of Management of Schools

Dear chairperson,

My name is Walter Doyle and I am currently completing a Master's degree by research in Waterford Institute of Technology. I plan to conduct a survey into the provision of facilities suitable for physical activity and subsequently the physical activity interest and participation of adolescents in your area. This is an integral part of a Master's thesis and will constitute the second phase of my research.

This phase has been designed with the intention of questioning adolescents through questionnaires in their school about their physical activity patterns. Therefore, I am writing to you in the hope that you will allow me permission to distribute questionnaires to adolescents in school.

The results of this study will be compiled in a Master's thesis however; no individual school, staff member or pupil will be mentioned by name and data received will be strictly confidential and will only be accessible by myself. I would also be prepared to present the key findings to the board of management if required. I would be very grateful if you would consider my request and should you have any queries or need to contact with me, my contact details are outlined at the end of this page.

Yours sincerely,

Walter Doyle.

Mobile Number 087 9180065 or E Mail: dialwalt@gmail.com

Appendix C – Letter to School Principals

Dear principal,

My name is Walter Doyle and I am currently completing a Master's degree by research in Waterford Institute of Technology. I plan to conduct a survey into the provision of facilities suitable for physical activity and subsequently the physical activity interest and participation of adolescents in your area. This is an integral part of a Master's thesis and will constitute the second phase of my research.

This phase has been designed with the intention of questioning adolescents through questionnaires in their school about their physical activity patterns. Therefore, I am writing to you in the hope that you will allow me permission to distribute questionnaires to adolescents in your school. I am willing to distribute the questionnaires at times suitable with your school's timetable. The questionnaire should take approximately 35 to 40 minutes to complete.

The results of this study will be compiled in a Master's thesis however; no individual school, staff member or pupil will be mentioned by name and data received will be strictly confidential and will only be accessible by myself. I would also be prepared to present the key findings to members of your staff if required. I would be very grateful if you would consider my request and should you have any queries or need to contact with me, my contact details are outlined at the end of this page.

Yours sincerely,

Walter Doyle.

Mobile Number 087 9108065 or E Mail: dialwalt@gmail.com

Appendix D – Letter to Parents/Guardians

Dear parent/guardian,

My name is Walter Doyle and I am currently completing a Master's degree by research in Waterford Institute of Technology. I plan to conduct a survey into the provision of facilities suitable for physical activity and subsequently the physical activity participation of adolescents in your area. This is an integral part of a Master's thesis and will constitute the second phase of my research. This phase has been designed with the intention of questioning adolescents through a questionnaire and activity diary about their physical activity patterns. Questionnaires will be completed in their respective schools, while activity diaries will need to be filled out at home every day for one week.

I am therefore writing to you in the hope that you will allow me permission to distribute a questionnaire and activity diary to your son/daughter and allow your son/daughter to participate in this study. However, before commencing I require written consent from you and your son/daughter, before he/she can take part in this study. Please note that your son/daughter will not be forced to participate in this study and can withdraw from taking part at anytime. The results of this study will be compiled in a thesis however; no individual will be mentioned by name and data collected will be strictly confidential and will only be accessible by myself. Should you have any queries concerning this study I will be happy to answer any questions you may have. My contact details can be found at the end of this page.

Yours sincerely,

Walter Doyle.

.....
Parental Consent

Please return to the school

Name of Student: _____

Class: _____

I hereby give consent for my son/daughter to complete the questionnaire investigating the physical activity patterns of adolescents.

Signature of parent/guardian: _____

.....
Student Consent

I give my consent to participate in the above study within my school concerning the physical activity patterns of young adults.

Signature of Student: _____

Mobile Number 087 9180065 or E Mail: dialwalt@gmail.com

Appendix E – Letter to Participants

Dear student,

My name is Walter Doyle and I am currently completing a Master's degree by research in Waterford Institute of Technology. I plan to conduct a survey into the provision of facilities suitable for physical activity and then look into the physical activity participation of young people in your area. This is an important part of a Master's thesis and will amount to the second part of my research. This phase has been designed with the intention of handing out a questionnaire and an activity diary to young people in a group situation in their school and by getting these young people to complete this questionnaire in order for me to assess their physical activity patterns. Questionnaire should take approximately 45 minutes to complete, while activity diaries will need to be taken home and filled out each day for one week.

However, before starting I need your written consent, and the consent of one of your parents or guardians, to allow me to question you in relation to your physical activity patterns. The consent form can be found at the end of the attached letter. Please note that your participation in this project will not result in any reward and you will not be penalised for choosing not to participate. You can also withdraw from taking part in this project at anytime. However, your cooperation would be greatly appreciated as I require approximately 400 young adults to participate in this study. The results of this study will be compiled in a thesis however; no individual will be mentioned by name and data collected will be strictly confidential and will only be accessible by myself. Should you have any queries concerning this study I will be happy to answer any questions you may have. My contact details can be found at the end of this page.

Yours sincerely,

Walter Doyle.

Mobile Number 087 9180065 or E Mail: dialwalt@gmail.com

Appendix F – Interview Questions

MANAGEMENT:

1. Can you tell me about your career to date?
2. What is your main role in your current position?
3. What are your priorities for Thurles/Dungarvan/Youghal in the future?
4. Do you think local authorities have a role to play in providing facilities suitable for physical activity? If yes, to what degree?
5. Does Thurles/Dungarvan/Youghal Town Council have a policy on physical activity provision? If yes, what is the policy?
6. Do you think you have achieved any major achievements to date? If yes, what are they?
7. How many people are employed in this administration?

HOUSING:

8. How long would it take for a housing development plan to be granted planning permission?
9. Once a housing development plan has been submitted for planning permission, what steps are taken to review these plans? Who inspects plans?
10. What would be the criteria for an adequate Public Open Space within a housing development plan?

11. Would developers be allowed a 'free hand' in deciding what they provide with regard to Public Open Space within a development?
12. On the completion of a development, is the site reviewed to ensure adequate Public Open Spaces exist? If yes, who reviews the site?
13. When planning permission has been granted to a housing project, are similar characteristics expected in a council development (social housing) when compared to a private development with regard to Public Open Space?

ADOLESCENTS:

14. In your knowledge, has anyone ever conducted a survey on behalf of this council or has the council ever conducted a survey on the needs of adolescents? If yes, when and by whom?
15. Does Thurles/Dungarvan/Youghal/Dungarvan/Youghal Town Council have a committee appointed specifically to deal with adolescent issues?
16. Does Thurles/Dungarvan/Youghal/Dungarvan/Youghal Town Council have any policy document or guidelines to follow when dealing with adolescent issues?
17. In your knowledge, have adolescents been involved in any decision making processes with regard to their needs in Thurles/Dungarvan/Youghal/Dungarvan/Youghal?
18. In your knowledge, have adolescents (individuals or in groups) ever approached the Thurles/Dungarvan/Youghal/Dungarvan/Youghal Town Council seeking the provision of any facility?
19. Are there any facilities in Thurles/Dungarvan/Youghal/Dungarvan/Youghal which may be considered a compulsory provision for adolescents?

20. Do you think adolescents are being catered for in terms of facilities for physical activity in Thurles/Dungarvan/Youghal? Question 22 asks directly.
21. In your opinion, what facilities do you think adolescents would like to see provided in Thurles/Dungarvan/Youghal?

FACILITIES:

22. What facilities are available for physical activities in Thurles/Dungarvan/Youghal?
23. In your opinion, are these facilities adequate for a town the size of Thurles/Dungarvan/Youghal?
24. Has the council any direct influence on the management of these facilities?
25. Would you have any idea who the main users of physical activity facilities are in Thurles/Dungarvan/Youghal?
26. Do you know of any plans to improve the current facilities available for physical activity in Thurles/Dungarvan/Youghal in the future?
27. Has the council any involvement in projects to improve facilities suitable for physical activity in the future?
28. Would you have any knowledge to whether road and footpath networks are used by children and/or adolescents to commute to and from schools?
29. In your opinion are the road and footpath networks in Thurles/Dungarvan/Youghal suitable for cycling and walking for children and/or adolescents?

FUNDING:

30. What funding is available to Thurles/Dungarvan/Youghal Town Council for physical activity?
31. Subsequently what funding is available from Thurles/Dungarvan/Youghal Town Council, for physical activities in the town?
32. Who decides how funding is allocated?
33. How would new projects be funded?
34. In your knowledge, has Thurles/Dungarvan/Youghal Town Council ever applied for any community or youth grant aid for projects?
35. Has any link been established to develop sports partnerships within Thurles/Dungarvan/Youghal?

Appendix G – Questionnaire and Activity Diary

Investigating Adolescent Physical Activity and Location for Physical Activity. Where does the Local Authority Fit– A Case Study of Three Irish Towns

Please read the following notes before completing the questionnaire.

I would like to thank you for agreeing to complete this questionnaire which has been designed to establish the physical activity patterns and the location of physical activity facilities for adolescents. The purpose of this study is firstly, to investigate the provision of facilities suitable for physical activity in your area, and secondly, to assess the physical activity patterns of adolescents from three medium sized towns in counties Waterford, Cork and Tipperary.

Please answer all questions as honestly as possible as your views are very important to this research project. There are no right or wrong answers. All the answers given in this questionnaire will be **confidential** and will only be viewed by those involved in this research project. These questions may require you to **write**, **number**, or **circle** answers.

Section A – General Information

Please write answer:

1. Name of school: _____
2. What school year are you in? _____
3. What is your age? _____

Please circle answer:

4. Gender: Male....1 Female....2

Please circle answer:

5. In which of the following do you live?
- | | | | |
|----------------------------------|---|---------------------|---|
| Detached House | 1 | Semi-detached House | 2 |
| Terraced House | 3 | Apartment | 4 |
| Shared parenting between 2 homes | 5 | Other | 6 |

If option 5, please give details of where you live:

If Other, please give more details:

Please circle answer:

6. Which of the following describes where you live? (Urban = Town **or** Rural = Countryside)

Urban....1 Rural.....2

Please write answer:

7. Who currently lives in your house? (E.g. brother/sister/father/mother/aunt/uncle/grandfather/grandmother etc):

If your father or male guardian lives with you, please answer questions 8, 9 and 10, if no please proceed to question 11.

Please circle answer:

8. Does your father/male guardian work? Yes....1 No....2
If Yes, please state occupation:

Please circle answer:

9. How far would your father/male guardian have to travel to work each day?

Under 1 mile	1	Over 1 mile & under 2 miles	2
Over 2 miles & under 5 miles	3	Over 5 miles & under 10 miles	4
Over 10 miles	5		

Please circle answer:

10. How would your father/male guardian travel to work?

- | | | | |
|-------|---|-------|---|
| Walk | 1 | Cycle | 2 |
| Car | 3 | Bus | 4 |
| Taxi | 5 | Train | 6 |
| Other | 7 | | |

If Other, please give details:

If your mother or female guardian lives with you, please answer questions 11, 12 and 13, if no please proceed to question 14.

Please circle answer:

11. Does your mother/female guardian work? Yes....1 No....2

If Yes, please state occupation:

Please circle answer:

12. How far would your mother/ female guardian have to travel to work each day?

- | | | | |
|------------------------------|---|-------------------------------|---|
| Under 1 mile | 1 | Over 1 mile & under 2 miles | 2 |
| Over 2 miles & under 5 miles | 3 | Over 5 miles & under 10 miles | 4 |
| Over 10 miles | 5 | | |

Please circle answer:

13. How would your mother/female guardian travel to work?

- | | | | |
|-------|---|-------|---|
| Walk | 1 | Cycle | 2 |
| Car | 3 | Bus | 4 |
| Taxi | 5 | Train | 6 |
| Other | 7 | | |

If Other, please give details:

Please write answer:

14. How many motor cars are there in your household? _____

Please circle answer:

15. Are your parents/guardians involved in physical activities?

Yes....1

No....2

If No, please skip to question 16.

If Yes, please specify which parent/guardian is involved and list the activities

Father/male guardian....1

Mother/female guardian....2

Both....3

1
2
3
4
5
6

Please circle answer:

16. Are the roads and footpaths safe to walk and/or cycle to and from school?

Yes.....1

No.....2

Please circle answer:

17. If the road and footpaths were suitable, would you walk and/or cycle to school more often?

Yes.....1

No.....2

Please circle answer:

18. How do you normally commute to school?

Walk 1

Cycle 2

Car 3

Bus 4

Taxi 5

Other 6

If Other, please give details:

Please circle answer:

19. How far do you live from your school?

Under 1 mile	1	Over 1 mile & under 2 miles	2
Over 2 miles & under 5 miles	3	Over 5 miles & under 10 miles	4
Over 10 miles	5		

Please circle answer:

20. How many schools books would you need to carry to and from school each day?

1 – 3 books	1	4 – 7 books	2
8 – 11 books	3	Other	4

If Other, please give details:

Please circle answer:

21. Have you ever taken part in a similar survey to investigate your physical activity patterns?

If Yes, when and where did this survey take place: Yes....1 No....2

If No, please proceed to question 23.

Please circle answer:

22. Who conducted this survey?

Your school	1	Local person	2
Local organisation	3	Government official	4
Other	5		

If Other, please give details:

Please circle answer:

23. Have you ever approached a local politician/council seeking the provision of any facility?

Yes....1

No....2

If No, please skip to question 25.

If Yes, did you approach these individuals on your own **or** in a group:

Please write answer:

24. What facility did you look for?

Please circle answer:

25. Where do you eat your lunch while at school?

School canteen	1	Shop	2
Chip shop	3	Other	4

If Other, please give more details:

Please write answer:

26. What would you eat and drink for lunch?

27. What would you eat and drink during break time?

Please circle answer:

31. Do you think you are physically active?

Yes.....1

No.....2

If No, please state why:

Please circle answer:

32. Are you encouraged to participate in physical activities by those at home?

Yes.....1

No.....2

If Yes, who encourages you to be physically active?

Please circle answer:

33. Do you participate in physical activities **after** school?

Yes.....1

No.....2

34. What physical activities do you participate in **after** school?

1
2
3
4
5
6

Please circle answer:

35. How much time do you devote to physical activity **after** school hours?

Under 1 Hour

1

Between 1 hour & 2 hours

2

Between 2 hours & 3 hours

3

Between 3 & 4 hours

4

Other

5

If Other, please give more details:

Please circle answer:

36. Do you participate in activities **after** school:

On your own.....1

With others.....2

37. What facilities are available for physical activities in your town?

1
2
3
4
5
6

Please write answer:

38. Who runs the facilities for physical activity in your area?

Please circle answer:

39. Are these facilities within walking distance of your home?

Yes....1

No....2

Please circle answer:

40. Are you charged when using facilities for physical activity?

Yes....1

No....2

Please circle answer:

41. Are facilities for physical activity too expensive?

Yes....1

No....2

Please circle answer:

42. If these facilities were cheaper, would you be more physically active?

Yes....1

No....2

Please circle answer:

43. Are you made to feel welcome while using facilities?

Yes....1

No....2

Please circle answer:

44. Do you think there are adequate facilities in your town for your age group?

Yes....1

No....2

Please circle answer:

45. If more facilities were available for physical activity in your area, would you be more active?

Yes...1

No....2

If No, please give the reason for your answer:

Please write answer:

46. What facilities do you think are needed in your area?

1
2
3
4
5

Please circle answer:

47. Which of the follow would you be more likely to take part in?

Physical activity/sport/games 1

Electronic computer games 2

Watch TV 3

Listen to music 4

Other 5

If Other, please give more details:

Please circle answer:

52. Do you participate in Physical Education (P.E) while at school?

Yes.....1

No.....2

If No, please give the reason why:

Please circle answer:

53. Do you enjoy participating in P.E.?

Yes....1

No....2

If No, please give the reason why:

Please circle answer:

54. Do you participate in school teams?

Yes.....1

No.....2

Please circle answer:

55. Are you physically active during break/lunch times?

Yes.....1

No.....2

If Yes, please list activities:

If No, please list what you would do during break/lunch times:

Please circle answer:

56. Are facilities in your school open to the public after school hours?

Yes....1

No....2

Please circle answer:

57. Would you like to see school facilities opened to the public after school hours?

Yes....1

No....2

Section D – Activity Diary

Please list in the spaces below **activity/activities** you participate in, the **time** you spend at these activities, **where** they occurred and **circle** whether activities occurred in a **school** setting, in a **competitive** or in a **casual** way. **School based** refers to activities strictly occurring within school, while **competitive** and **casual** refers to activities outside school times.

EXAMPLE OF HOW TO COMPLETE THIS SECTION FOR FIVE DAYS

Monday:

Activity	Time	Where	School Based	Competitive	Casual
a) <u>Walk</u>	<u>20 Mins</u>	<u>Footpath</u>	1	2	3
b) <u>Swimming</u>	<u>1 Hour</u>	<u>Pool</u>	1	2	3
c) <u>Walk</u>	<u>20 Mins</u>	<u>Footpath</u>	1	2	3
d) <u>Golf</u>	<u>4 hours</u>	<u>Golf Course</u>	1	2	3

Tuesday:

Activity	Time	Where	School Based	Competitive	Casual
a) <u>Walk</u>	<u>20 Mins</u>	<u>Footpath</u>	1	2	3
b) <u>Walk</u>	<u>20 Mins</u>	<u>Footpath</u>	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3

Wednesday:

Activity	Time	Where	School Based	Competitive	Casual
a) <u>Football</u>	<u>20 Mins</u>	<u>Street</u>	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3

Thursday:

Activity	Time	Where	School Based	Competitive	Casual
a) <u>Walk</u>	<u>20 Mins</u>	<u>Footpath</u>	1	2	3
b) <u>Hurling</u>	<u>30 Mins</u>	<u>Park</u>	1	2	3
c) <u>Walk</u>	<u>20 Mins</u>	<u>Footpath</u>	1	2	3
d) <u>Cycle</u>	<u>20 Mins</u>	<u>Road</u>	1	2	3

Friday:

Activity	Time	Where	School Based	Competitive	Casual
a) <u>Cycle</u>	<u>10 Mins</u>	<u>Cycle Lane</u>	1	2	3
b) <u>PE</u>	<u>1 Hour</u>	<u>Sports Hall</u>	1	2	3
c) <u>Cycle</u>	<u>10 Mins</u>	<u>Cycle Lane</u>	1	2	3
d) <u>Cycle</u>	<u>20 Mins</u>	<u>Road</u>	1	2	3

Monday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

Tuesday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

Wednesday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

Thursday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

Friday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
a) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

Saturday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
d) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

Sunday:

Activity	Time	Where	School Based	Competitive	Casual
a) _____	_____	_____	1	2	3
a) _____	_____	_____	1	2	3
b) _____	_____	_____	1	2	3
c) _____	_____	_____	1	2	3
e) _____	_____	_____	1	2	3

I would like to thank for your participation in completing this activity diary and questionnaire, Walter Doyle.