

An examination of key variables influencing physical activity behaviour in
adolescent girls during the transition from primary to secondary school

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Submitted for the degree of Doctor of Philosophy

Heriot-Watt University

School of Life Sciences

December 2009

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ABSTRACT

Research has suggested that the decline in physical activity (PA) levels for adolescent girls is most marked during the transition from primary school to secondary school. However, this decline in PA for adolescent girls is also coincident with the onset of maturation and as such, maturation and the physical changes associated with maturation (e.g., increased body fat and development of secondary sexual characteristics) may have a direct influence on PA. In addition, these physical changes may indirectly influence perceptions of competence and body attractiveness and subsequently influence PA behaviour. Therefore the aim of this thesis was to further explore this decline in PA during this transitional period. Study one involved a longitudinal examination of the relationship between maturation, physical self-perceptions and PA in adolescent girls over 12 months during the transition from primary to secondary school. At Phase 1 (primary school) 208 adolescent girls participated (mean age = 11.83 ± 0.39 years) and were tracked into secondary school (Phase 2) where 156 girls participated (mean age = 12.79 ± 0.31 years). PA was assessed using the Physical Activity Questionnaire for Children; maturation was assessed using the self-report Pubertal Development Scale; physical characteristics of body mass, waist circumference and sum of skinfolds were measured and physical self-perceptions were assessed using the Children and Youth's Physical Self-Perception Profile. Cross-sectional findings at both Phase 1 and Phase 2 highlighted that maturation and physical characteristics were not significantly related to PA and there were no significant differences in PA between maturation stages. Results also indicated that physical self-perceptions were all significant moderate positive correlates of PA at both primary and secondary school. Longitudinal findings examining the change in variables over the 12 months highlighted a significant decrease in PA from primary to secondary school. Furthermore, this decrease was evident during break-times, lunch-times and after-school yet PA significantly increased in PE lessons between schools. Maturation had a limited influence on PA behaviour; however the increase in body mass was related to perceptions of body attractiveness and physical self-worth becoming less positive. In addition, decreases in physical self-perceptions partially accounted for the decrease in PA over the 12 months. It was apparent from the quantitative findings of study one that further research was needed to explore the influence of additional variables on PA. The aim of study two was to explore the decrease in PA evident during the school transition using a narrative approach. A purposive sampling technique was used and one-to-one narrative interviews were conducted ($n = 14$; age 13.6 ± 0.3 years). Interpretative phenomenological analysis was used to identify the 'whats' (i.e. content) of the girls' PA stories and structural analysis was used to identify 'how' the girls told their PA stories. Findings suggest that the PA environment had an impact on their sense of self with regards to levels of enjoyment, perceived competence, confidence and self-presentation issues. These findings support the current research trend towards a focus on the environment the individual is experiencing rather on the individual. Overall the findings suggested that the decrease in PA behaviour in early adolescent girls may depend more on perceptions of competence and ability in a particular environment rather than the possible influence of the physical changes accompanying maturation.

ACKNOWLEDGEMENTS

This thesis is based on the physical and emotional support of the experts, laymen and loved ones in equal measure. Knowledge is, in the end, based on acknowledgements and, unsurprisingly, there are a number of personal acknowledgements I wish to make.....

Firstly, thank you to all of the girls involved for your time, patience and enthusiasm. Despite the frustrations, working with you all was such a joy and I take away fond memories of laughter and fun from my research experience. Special thanks to those girls who shared their stories so openly and honestly with me. Thank you all.

Secondly to Claire, Sarah and Joan, whom I have affectionately termed my 'sounding boards'. Thanks for tirelessly listening to my research concerns, doubts, worries and fears and more importantly, for always responding to these whenever needed. From the many hours of tears and laughter we have shared collecting data, lifelong friendships have been made, for which I am truly grateful.

Despite this thesis consisting of over 100,000 words, for me there are no words to describe the unwavering support, commitment and belief given to me by my two supervisors, Ailsa and Sam. Never has there been a time when they were too busy to see me or didn't have the answers to my many questions and for this I say thank you. I thank you both for your valued knowledge and judgment when I needed direction; for your eternal optimism and positive outlook when I needed encouragement and most of all for giving me this opportunity. Wholeheartedly, thank you.

To all my fantastic friends for their constant support, understanding and most importantly, for keeping me sane all these four years! However I am now going to have to think of a new excuse not to socialise with you all at the weekends! A huge thank you to my mum and dad for never questioning what I was doing yet always believing in me. I love you both dearly.

To my best friend, Cagey. I know I will never convert you to a qualitative approach to research but thank you for reading endless drafts of my work and for always providing me with esteemed words of wisdom?! Thank you for your patience, tolerance and understanding at having a 'third person' in our relationship for the past three years.....although I'm not sure if we'll have anything left to talk about now! Thanks for picking me up when I've been down, making me smile and always believing in me. Finally, I finish by dedicating this thesis to the greatest teacher I have ever had.....

Grandad, this one is for you.

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CHAPTER 1: INTRODUCTION

1.1 Context of the research

There is a considerable body of evidence to show that regular participation in moderate to vigorous physical activity (PA) is an essential part of a healthy lifestyle (Roberts, Tynjala & Komkov, 2003). Despite this, physical inactivity has become a global problem, with more than half the world's population not reaching moderate PA levels (World Health Organisation, 2005). Although not as well documented as for adults, PA participation for children and adolescents has a range of health benefits, including healthy musculoskeletal growth and development, maintenance of energy balance, psychological well-being and social interaction, as well as preventing future morbidity (Department of Health, 2004). Yet longitudinal data consistently show that young people's PA participation declines across this age group (Telema & Yang, 2000; Aaron, Storti, Robertson, Kriska & LaPorte, 2002). In particular, the decline in PA in girls is more marked than in boys (Kimm, et al., 2002; Grunbaum, et al., 2004). Scottish cross-sectional data indicates that among girls, PA levels decline after the age of 8-10 years, with 58% meeting the current PA guidelines at 11-12 years of age, dropping to just 41% of girls aged 13-15 years meeting these guidelines (Bromley, et al., 2003). Similarly, recent findings from the Physical Activity in Scottish School Children study (Inchley, Kirby & Currie, 2008) highlighted that the decline in PA levels for adolescent girls is most marked during the transition from primary school to secondary school, suggesting that this is a key transitional period for PA behaviour and choices.

In addition to the negative physical and mental health outcomes associated with inactivity for the individual, there is also an increasing economic burden of inactivity on both a national and global scale. In a recent report detailing the economic and health burden of disease related to physical inactivity in the United Kingdom (UK), Allender, Foster, Scarborough and Rayner (2007) found that the estimated direct cost of inactivity to the National Health Service is £1.06 billion per year. Therefore, it is apparent that both the individual and economic costs of inactivity are prevalent and development of appropriate strategies to counteract the decline in PA is urgently needed. It has been suggested that prevention of inactivity must begin at a young age (Naylor & McKay, 2009) and interventions aimed at increasing PA in children and adolescents are now widespread in a variety of contexts (e.g. schools, communities). However, PA behaviour is complex, and there are likely to be a number of variables (e.g. demographic and

biological; psychological; behavioural; social and cultural and physical environment variables) influencing PA in children and adolescents (Sallis, Prochaska, Taylor, Hill, & Geraci, 1999) which need consideration in the design and implementation of such interventions.

1.2 Purpose and significance of the research

Physical inactivity is prevalent in adolescent girls and tackling this issue has become a national priority of the Scottish National Physical Activity Implementation Framework 2008-2011 (Lowther & Reid, 2008). Similarly, the National Institute for Health and Clinical Excellence (NICE, 2009) have recently published specific guidelines for supporting adolescent girls aged 11-18 years in their PA behaviours. Exploration of this decrease in PA in early adolescent girls during the school transition provides the overall purpose of this thesis. Research points towards a multitude of variables that could influence PA behaviour in adolescent girls. However, it is beyond the scope of this thesis to explore all of these variables. An area which has received limited research attention is the view of an interactive influence of a number of variables on PA behaviour and as such, variables should not be considered as mutually exclusive (Biddle, Whitehead O'Donovan & Nevill, 2005). Two such variables that may be interrelated are the biological and psychological determinants of PA behaviour. Biological variables (e.g. age, body size and maturational status) are considered to be non-modifiable correlates of PA behaviour yet such variables could have a potential influence on other modifiable correlates, for example psychological variables (e.g., perceptions of competence, body image). As such, the main focus of the research is to examine the independent and interactive influence of biological variables, in particular maturation and psychological variables, specifically physical self-perceptions, on PA behaviour during the transition from primary school to secondary school.

1.3 Summary of individual chapters

This chapter has provided a brief context to the research area and has identified the purpose and significance of the research. In Chapter 2, the importance of PA to both physical and mental health during childhood and adolescence is emphasised and current PA guidelines for health for children and adolescents are outlined. The chapter then moves on to discuss the various methods available to assess child and adolescent PA participation, highlighting that the majority of epidemiological studies have used self-report data to identify a decline in PA during adolescence. Subsequently, a discussion of

the research which has documented the decline of PA in adolescent girls is provided, to offer a context for the current research and to emphasise the physical inactivity issue within the population of adolescent girls. Improving our understanding of the factors associated with the decrease in PA for adolescent girls is essential yet physical inactivity in a complex issue. Following this is a discussion of the research that has explored the determinants of child and adolescent PA behaviour, with a specific focus on adolescent girls, which include: demographic variables; biological variables; psychological variables; behavioural variables; social and cultural variables and physical environment variables. The chapter concludes by identifying that all of these variables may impose an interrelated influence on PA and two such variables that may be interrelated are biological and psychological correlates of PA behaviour. Therefore, Chapter 2 ends by identifying that the interactive and independent influence of both the biological (e.g. age and maturation) and psychological (e.g. physical self-perceptions and body image) correlates could be a potential research avenue worthy of further investigation.

The biological variable of maturation is discussed in detail in Chapter 3, where the concept of maturation is introduced as a transitional period from childhood into adolescence. The chapter then moves on to discuss the two indicators of biological maturation; sexual maturation and somatic maturation. Specifically, the section on sexual maturation examines the development of the Pubertal Development Scale (PDS; Petersen, Crockett, Richards & Boxer, 1988), a self-report assessment of maturation. The section on somatic maturation outlines the physical changes associated with maturation and discusses the literature examining the relationship of these physical changes with PA, followed by an examination of the research investigating a possible influence of maturation on PA during adolescence. The chapter then moves on to introduce the self-concept, focusing on the development of the multidimensional self-concept and subsequent development of the multidimensional physical self-concept and physical self-esteem. This is followed by a discussion on methods of measuring physical self-esteem and physical self-perceptions, with a focus on children and adolescents. Following the development of adequate instrumentation to assess physical self-perceptions, researchers have been able to establish clearer links between the physical self and related behaviours, such as PA behaviour. Subsequently, Chapter 3 provides a theoretical understanding of the link between perceptions of competence and PA in both children and adolescents. It examines the relationship between the perceptions of competence and PA, with particular reference to adolescent girls, highlighting that the

physical changes associated with maturation could play an important role in influencing perceptions of competence in a PA setting. The final section of the literature review discusses the important influence of maturation on the formation of the physical self during adolescence and research examining the relationship between maturation and physical self-perceptions in adolescent girls is reviewed. Lastly, the links between PA, the physical changes associated with maturation, maturation and physical self-perceptions are summarised and gaps in the research knowledge are identified. Therefore, Chapter 3 concludes by identifying the overall research aims for study one.

Chapter 4 is the quantitative study examining the relationship between maturation, physical self-perceptions and PA in early adolescent girls and the influence of maturation on PA and physical self-perceptions in adolescent girls during the transition from primary school to secondary school. Cross-sectional findings highlighted that physical self-perceptions are positively related to PA yet maturation and the physical characteristics of maturation were not related to PA at primary school or secondary school. Longitudinal findings highlighted that maturation had no direct influence on the decrease in PA evident during the transition from primary school to secondary school yet changes in physical self-perceptions accounted for a small amount of the decrease in PA. Examination of the decrease in PA during the transition highlighted that PA at break-time, lunch-time and immediately after school were key contributors to this decrease whereas PA during physical education (PE) lessons increased from primary school to secondary school. Study one concludes by stating that from the findings it was difficult to establish a direct link between the advancement in maturational status and increase in physical characteristics and the decrease in physical self-perceptions and PA during the transition between schools.

Overall quantitative findings from study one highlighted that the decrease in PA during the transition from primary school to secondary school is only partially influenced by certain psychological and biological variables. It was apparent that further research was needed to explore in-depth the influence of additional variables on PA. Chapter 5 introduces qualitative research and discusses the integration of quantitative and qualitative research in relation to the philosophical assumptions of this thesis. Following this, the chapter examines qualitative research in the area of PA behaviour, with a particular focus on PA behaviour and adolescent girls. Subsequently, the chapter introduces narrative inquiry as a qualitative approach to understand PA behaviour in

adolescent girls during the transition between schools. A clear definition of narrative inquiry in relation to the research questions is provided and the collection and analysis of narrative data is discussed. Drawing from previous narrative literature in sport and exercise psychology, the final section of the chapter outlines the potential role of narrative in understanding the research question.

Chapter 6 presents study two which further explores the decrease in PA in a selection of the girls over the transition from primary school to secondary school using a narrative approach and guided by the quantitative findings in study one. Therefore, allowing an in-depth and individual examination of additional key variables influencing PA behaviour during the school transition. An exploration of both the content and structure of the girls' PA stories highlighted that a change in the PA environment is central to understanding the decline in PA levels since primary school. Findings highlighted that creating a positive environment for PA through choice, reducing the focus on competence and competition and allowing friend involvement to enhance social support, is likely to reduce the decrease in PA during the school transition for adolescent girls.

To conclude, Chapter 7 discusses the contribution of the individual studies in line with the original research aims, along with the practical implications of the research findings and consideration of future research directions. Finally, the chapter concludes with personal reflections of the research experience and final thoughts.

CHAPTER 2: UNDERSTANDING PHYSICAL ACTIVITY BEHAVIOUR IN ADOLESCENT GIRLS

The review of the literature was carried out using computer searches of MEDLINE (First Search), Web of Science, PsycInfo (BIDS), Google Scholar and SportDiscus for relevant articles. Key words included: physical activity, adolescent/adolescence, girl, female, school, correlates, determinants, physical self-perceptions, competence, maturation.

2.1 Introduction

Physical activity (PA) is defined as a complex set of behaviours that encompass any bodily movement produced by skeletal muscles that result in energy expenditure (Caspersen, Powell, & Christenson, 1985). Therefore, PA incorporates a range of activities including spontaneous play, exercise, physical education (PE) and organised sport (Malina, Bouchard & Bar-Or, 2004). In brief, PA participation has a range of health benefits for children and adolescents, including healthy musculoskeletal growth and development, maintenance of energy balance, psychological well-being and social interaction, as well as preventing future morbidity (Department of Health, 2004). However, adolescence has been identified as a risk period for PA attrition, particularly among girls (Grunbaum, et al., 2004). The purpose of this chapter is to highlight the importance of PA as a key health behaviour during childhood and adolescence and to highlight the various methods available to assess child and adolescent PA participation. The chapter then focuses on research which has documented the decline of PA in adolescent girls, to provide a context for the current research and to emphasise the physical inactivity issue within the population of adolescent girls. Finally the chapter considers variables associated with PA, providing a summary of the literature available.

2.2 Health benefits of physical activity in childhood and adolescence

PA in young people provides an important vehicle for play and recreation, learning physical and social skills, developing creative intelligence and stimulating growth and fitness (Department of Health, 2004). In addition there are both physical and mental health benefits of PA participation for children and adolescents. In relation to the physical health benefits, there is limited direct evidence linking physical inactivity in children with lifestyle related diseases such as osteoporosis, hypertension, diabetes or cardiovascular diseases as these only tend to develop later in adulthood. Instead, the

research tends to focus on the degree to which children and adolescents display excessive risk factors for such diseases, for example increased insulin levels, low bone mineral density and increased blood pressure. A risk factor is a condition that, when present over an extended period, significantly increases the probability of a common degenerative disease (Malina, et al., 2004).

Cardiovascular risk factors

Obesity may be an important factor in the incidence of cardiovascular disease risk factors during adolescence, for which symptoms include increased blood pressure, increased insulin levels, adverse lipid profiles and excess body fat. Participating in regular PA and practising healthy eating behaviours can help adolescents achieve normal body weight and body composition, thereby reducing their risk of becoming obese (Lotan, Merrick & Carmeli, 2004).

Diabetes

Although still small, the number of children and adolescents in the United Kingdom (UK) with Non-Insulin Dependent Diabetes Mellitus or Type 2 diabetes is increasing (Drake, Smith, Betts, Crowne & Shield, 2002). This is coincident with the increase in the prevalence of obesity, increased insulin resistance and decrease in PA levels of children observed over the past 30 years (American Diabetes Association, 2000). Regular participation in PA can contribute towards increasing insulin sensitivity, reducing plasma insulin levels and improving glucose tolerance (Bouchard & DePrez, 1995). Therefore, enhanced but sustained PA, combined with dietary changes, are major factors in the prevention and treatment of Type 2 diabetes (Ivy, Zedec & Fogt, 1999).

Bone Health

During the adolescent years, there is a rapid gain in bone mass, especially around the adolescent growth spurt which occurs at about 12 years of age in girls and 14 years of age in boys. Peak bone mass is usually achieved around the age of 20-30 years of age (Lu, Brody, Ogle, Morley, Humphries, Allen, et al., 1994). Therefore it is essential to achieve a high bone mass during the adolescent growth spurt to provide a reserve of bone tissue to counter the age-related loss of bone mass and the likelihood of osteoporosis in later life. Weight bearing activities incorporating high peak strains, high strain rates and unusual strain distributions are particularly good for increasing bone mineral density (Mosley & Lanyon, 2002). Therefore, participation in activities such as running and jumping, is important for bone health during adolescence.

Mental Health

There is a wealth of evidence to suggest that PA is important for psychological well-being in children and adolescents (Calfas & Taylor, 1994; Mutrie & Parfitt, 1998; Penedo & Dahn, 2005). Participation in PA can provide children and adolescents the opportunity to enhance perceptions of competence, body image and self-esteem (Gruber, 1986; Fox, 2000) and has also been shown to reduce symptoms of stress, anxiety and depression in adolescents (Calfas & Taylor, 1994).

2.3 Establishment of lifetime activity patterns

In addition to the health benefits of PA, establishment of lifetime activity patterns is also a positive consequence of regular PA participation during adolescence. It is widely believed that if an individual is physically active during childhood then they are likely to remain active as an adult (Fuentes, Notkola, Shemeikka, Tuomilehto & Nissinen, 2003). Based on data from the National Longitudinal Study of Adolescent Health in the United States (US), a longitudinal examination of PA and sedentary behaviour was carried out by Gordon-Larsen, Nelson and Popkin (2004). The study sample nationally represented more than 20,000 adolescents aged between 11 and 21 years and from their findings the authors concluded that the vast majority of adolescents do not achieve five or more bouts of moderate PA per week. Furthermore, adolescents continue to fail in achieving this amount of PA into adulthood. In support of this, findings from a 21 year tracking study of PA levels from childhood through to adulthood by Telema, et al. (2005) highlighted that a high level of PA at ages 9 to 18 years, especially when continuous, significantly predicted a high level of adult PA.

2.4 Current physical activity guidelines for health benefits for young people

The health benefits of PA are well documented, yet exact guidance as to the amount of PA required for children and adolescents to achieve these health benefits continues to be a debated issue within the research area. The establishment of national guidelines for recommended levels of PA for children and adolescents by the American College of Sports Medicine began in the early 1990s. Since then a number of organisations have proposed such guidelines including the National Association for Sport and Physical Education (PE) in the US and the Health Education Authority in the UK. Due to a continuing trend in the increase in physical inactivity in the UK in both children and adults (Sprouston & Primatesta, 2002; Bromley, et al., 2003), the encouragement of active lifestyles was recognised by the Chief Medical Officer as an important element of

public health strategy. As a result, a report by the Department of Health (2004), 'At least five a week: Evidence of impact of PA and its relationship to health' was released, detailing recommended PA guidelines for children and adults in order to achieve general health benefits. Based on the research evidence available, current UK guidelines for PA for young people for general health benefits are as follows, where moderate intensity exercise is defined as equivalent to brisk walking which might leave the participant feeling warm and slightly out of breath:

- I. Ideally all young people should participate in PA of at least moderate intensity for 60 minutes on five or more days of the week.
- II. For those young people undertaking little activity, the guidelines recommend a daily target of 30 minutes initially.
- III. Furthermore, it is recommended that activities specifically aimed at improving muscular strength, flexibility and bone health should be undertaken on two or more days a week.

These guidelines are in line with the majority of countries worldwide yet despite these national PA guidelines being established for over five years, there is still doubt over how clear and concise this health message is for the general public to understand and follow. Furthermore, it is questionable as to whether the general public are fully aware of exactly how much PA they need to do in order to meet these guidelines. In a recent examination of Canadian PA guidelines for children and youth, Janssen (2007) outlined several shortcomings of PA guidelines, calling for more comprehensive studies examining the dose-response relationship between PA and health in order to determine the minimal and optimal amounts of PA required for health. In addition, the majority of PA guidelines are based on evidence assessing the relationship between PA and biological health outcomes such as obesity, diabetes and cardiovascular disease. The research examining the emotional and psychological health outcomes of PA appears to be neglected when determining PA guidelines. This could be of more relevance when developing PA guidelines for children and adolescents, where a focus on promoting participation in activities that are fun and enjoyable could be more effective in delivering the PA message in this population sample.

2.5 Methods of assessing physical activity in children and adolescents

In order to accurately compare the current PA levels of children and adolescents to the recommended PA guidelines, it is necessary to employ the most reliable and appropriate methods to measure actual PA levels. There are a number of methods available to assess PA; however whichever method is chosen, it remains virtually impossible to gain an exact measure of the amount of PA participation in children and adolescents which is able to account for the type, duration and intensity of an activity. As recently highlighted in a review comparing direct versus self-report measures of PA, Prince, et al. (2008) caution that these two methods of assessing PA can differ greatly in their outcome due to the different aspects of PA being assessed. Twisk (2001) suggests that, “the best one can do is to obtain a crude indication of habitual PA, probably achieved by a combination of different methods” (p. 343). In essence, methods of assessing PA must be socially acceptable, should not burden the child and should only minimally influence the child’s normal PA patterns to reduce the likelihood of reactivity (Armstrong & Welsman, 2006). In addition, measurement techniques used in research examining children and adolescent PA must demonstrate validity, reliability and be practical to administer (Laporte, Montoye & Caspersen, 1985).

2.5.1 Objective measures of physical activity

There are a number of objective measures available to assess PA in children and adolescents. The doubly-labelled water technique is considered the ‘criterion standard’ for evaluation of energy expenditure. This method assesses energy expenditure by estimating carbon dioxide production using isotope dilution over a minimum of three days. However, it should be noted that energy expenditure is a physiological consequence of PA and the two are distinct constructs, which limits attempts to use doubly-labelled water to validate other measures of PA (Armstrong & Welsman, 2006). Sirard and Pate (2001) suggest that direct observation is a more practical and comprehensive criterion measure for PA research in children due to its ability to capture short-term, sporadic patterns and sudden changes in their PA (Bailey, Olson, Pepper, Porszasz, Barstow & Cooper, 1995). However it is often difficult to follow a child for a full day (Janz, Whitt & Mahonney, 1995; Armstrong & Welsman, 1997) and few long-term direct observation studies have been carried out with this population.

Several secondary objective measures of PA are now widely available, for example heart rate monitors, pedometers and accelerometers. Heart rate (HR) monitoring is based upon the linear relationship between HR and oxygen consumption. However, there are numerous other factors (e.g., anxiety, climate, hydration status and muscle physiology) that can influence HR in addition to PA, and these factors are particularly influential at low intensity PA. Despite this, HR monitoring is socially accepted as a method of assessing children's PA, as it causes minimal reactivity (Malina, et al., 2004) and is cost-effective for use in small to moderate size studies. Pedometers are relatively simple motion sensors and are generally used to estimate the numbers of steps recorded over a period of time; however they are unable to assess the intensity or patterns of activities performed. Despite these drawbacks, Rowlands, Eston and Ingledeu (1997) suggest that because pedometers are relatively inexpensive, reusable, objective and non-reactive they are useful tools for large scale studies and are well suited to the assessment of children's PA. Accelerometers are considered to be more advanced motion sensors compared to pedometers as they have the ability to sense and register acceleration within a movement and not just the number of movements; however possibly due to their expense, there has only been one known large-scale study that has successfully used accelerometers to assess the PA levels and patterns of European children aged 9-15 years (Riddoch, Anderson & Wedderkopp, 2004).

2.5.2 Subjective measures of physical activity

Examples of subjective measures of PA include retrospective questionnaires, interviewer-administered questionnaires, proxy reports and diaries. The use of diaries to record PA is considered one of the most accurate subjective techniques as exact details of frequency, intensity and type of activity can be captured. However, this technique has high levels of participant burden and the accuracy of the information recorded is highly dependent on the co-operation of the participants (Bratteby, Sandhagen, Fan & Samuelson, 1997). Furthermore, a diary can motivate people to become more active during the period of observation (Dishman, 2006). Self-report PA through the use of questionnaires is the most extensively used method of assessing children and adolescents' PA levels primarily due to the relatively low administration costs and the ability to use them in studies with large sample sizes.

Self-report questionnaires

Throughout PA research, self-report retrospective questionnaires are frequently used to assess PA levels in children and adolescents. On an international scale, the World Health Organisation (WHO) have consistently used PA surveys to assess PA behaviour in children and adolescents across Europe (Currie, et al., 2004) and Canada (King & Coles, 1992). Within the research literature there are a number of more detailed and comprehensive measures to assess children's PA levels, for example the self-administered PA checklist (SAPAC; Sallis, et al., 1996); the Physical Activity Questionnaire for Older Children (PAQ-C; Crocker, Bailey, Faulkner, Kowalski & McGrath, 1997); the previous day PA recall questionnaire (Weston, Petosa & Pate, 1997); the seven day PA recall questionnaire (7-d PAR; Sallis, Buono, Roby, Micalc & Nelson, 1993) and the Fels PA questionnaire for children (Treuth, Hou, Young & Maynard, 2005). All of these questionnaires differ on the types of activities assessed, whether intensity and/or duration of activities are assessed and the time period of recall for PA. For example, the previous day PA recall questionnaire only requires the child to recall their previous day PA. A distinct advantage of this short time frame is that it reduces the complexity of the cognitive processing involved in recall for the child (Baranowski, Anderson & Carmack, 1998)

The 7-d PAR questionnaire and the PAQ-C both require the child to recall their levels of PA over the previous seven days. The 7-d PAR questionnaire is an interviewer-administered questionnaire where respondents are asked about the number of hours spent in sleep, moderate, hard, and very hard activities during the preceding week. Examples of the types of activities in each category are provided, and the week is separated into weekend days and weekdays. Sallis and colleagues (Sallis, et al., 1993) concluded that the 7-d PAR questionnaire is a reasonably reliable and valid measure of assessing PA with children aged 10-11 years; however it does require the presence of an interviewer and is therefore more costly and may introduce additional bias. The PAQ-C was developed by Crocker and colleagues (Crocker, et al., 1997) to assess moderate to vigorous PA during the last seven days across nine-items. The first section of the PAQ-C provides a checklist of activities participated in over the past seven days with the remaining eight questions organised using a segmented time-of-day or day-of-week structure. The PAQ-C has been used extensively in studies which have examined the relationship between PA and health outcomes in children and adolescents (e.g., Bailey, McKay, Mirwald, Crocker & Faulkner, 1999; Crocker, Eklund & Kowalski, 2000;

Mackelvie, McKay, Khan & Crocker, 2001). An examination of the validity of the PAQ-C (Kowalski, Crocker & Kowalski, 1997) demonstrated it to be moderately related to subjective measures of PA: the Leisure Time Exercise Questionnaire ($r = .41$); the seven day recall interview ($r = .46$) and objective measures of PA, the Caltrac motion sensor ($r = .39$) and the step test of fitness ($r = .28$). In addition, the PAQ-C utilises memory cues such as items relating to lunch time activity to enhance the recall ability of adolescents. Consistent with the majority of self-report PA questionnaires, the PAQ-C does not allow an estimate of energy expenditure or specific frequency, duration and intensity information. However, it does provide an assessment of general PA levels and is therefore particularly effective in large scale studies. Furthermore, compared to interviewer-administered PA questionnaires it is cost and time efficient and easy to administer to large population samples.

2.6 Decline in physical activity levels during adolescence

Research has predominantly shown that girls are less active than boys and that activity levels decrease with age (Biddle, Cavill & Sallis, 1998; Telema & Yang, 2000; Trost, et al., 2002). This decline in PA is apparent in both the US and the majority of European countries. In the US, large epidemiological studies have monitored PA levels throughout adolescence (e.g., National Longitudinal Study of Adolescent Health; Gordon-Larsen, McMurray & Popkin, 2000) and recent cross-sectional data from the National Youth Risk Behaviour Survey using self-report measures (Eaton, et al., 2007) highlighted a decrease in PA with age during adolescence with 56.3% of boys and 74.4% of girls failing to meet the recommended PA guidelines. In Europe, the Health Behaviour in School-aged Children (HBSC) is a large epidemiological study initiated in 1982 by researchers from three countries and shortly afterwards the project was adopted by the WHO. There are now 43 participating countries and regions within the network which aims to examine young people's health and well-being, health behaviours and their social context, including PA behaviour. Therefore, vast amounts of data on the PA behaviour of European adolescents are available and show the similarities in the PA levels of adolescents across European countries. Overall, cross-sectional findings of the HBSC studies show there is a decrease in PA with age during adolescence and European boys participate in more PA than girls.

It is clear that adolescence is a risk period for PA attrition, particularly among girls (Grunbaum, et al., 2004). Numerous studies have highlighted this decrease in PA in

adolescent girls (Aaron, et al., 2002; Kimm, et al., 2002; Nelson, Neumark-Stzainer, Hannan, Sirard & Story, 2006). For example, Kimm and colleagues (Kimm, et al., 2002) prospectively followed 1213 black girls and 1166 white girls enrolled in the National Heart, Lung, and Blood Institute Growth and Health Study from the ages of 9 or 10 to the ages of 18 or 19 years. Their findings highlighted that self-report PA levels for both black and white adolescent girls decreased by 83 percent over this 8 year period. Therefore, from the wealth of research documenting this substantial decline in the PA levels of girls during adolescence and the important links between physical inactivity and health related outcomes, gaining a detailed understanding of PA behaviour during the important transitional period of adolescence when long-term behaviour patterns are being established is critical.

2.7 Decline in physical activity levels of Scottish adolescent girls

Due to the complexity of the PA issue in girls there have been a number of surveys and studies examining the decline in girls' PA levels during adolescence in an attempt to inform national PA strategies in Scotland. These include the Scottish Health Survey (1998, 2003); the HBSC study: the WHO collaborative cross-national survey in Scotland and the Physical Activity in Scottish School Children (PASS) study. The Scottish Health Survey collects cross-sectional data on self-report PA behaviour of children from birth through to aged 16 years every five years. In the most recent Scottish Health Survey in 2003, of the girls in the 11-12 years age group, 17% fail to reach the recommended minimum of 30 minutes of PA per day and this increased to 36% in the 13-15 years age group. Similarly, the HBSC survey has been carried out in Scotland since 1990 and has allowed cross-sectional analyses of PA participation over four consecutive surveys and comparison with other European countries. The most recent available data from Scottish children is from the HBSC: WHO collaborative cross-national survey (2006) of 6,400 children in Primary 7 (P7; 11 year olds), Secondary 2 (S2; 13 year olds) and Secondary 4 (S4; 15 year olds). Assessment of PA levels was based on the moderate-to-vigorous physical activity (MVPA) screening measure developed by Prochaska, Sallis and Long (2001) which consists of two questions relating to the number of days that adolescents undertake PA of at least moderate intensity for at least 60 minutes, in accordance with current PA guidelines. Scottish findings from the survey highlighted that at age 11 years, 25% of girls and 39% of boys were achieving MVPA on 7 days of the week. By the age of 13 years of age this drops dramatically in girls to 15% with only a small decrease in boys to 28% and continues to

drop further to 9% in girls and 21% of boys by 15 years of age. This data clearly demonstrates the sharp drop in PA levels in Scottish adolescent girls, particularly when compared to their male counterparts.

Research has shown that the decline in young people's habitual PA also coincides with a change in schools (Biddle, Gorely & Stensel, 2004; Boreham & Riddoch, 2001). The Physical Activity in Scottish Schoolchildren (PASS, 2002) is a longitudinal study which aims to investigate levels of PA among Scottish school children and identify key factors which may influence PA during the key transition from primary school to secondary school. The final PASS survey was recently completed (Inchley, et al., 2008) and data for a total of 641 pupils who completed the questionnaire in all five consecutive survey years from P7 in 2002 to S4 in 2007 are available. The PAQ-C (Crocker, et al., 1997) was used to measure overall PA participation and to assess the range of opportunities for PA both in school and out of school. Findings of the study demonstrated significant gender differences in mean PAQ-C scores and in the percentage of pupils classified as high active across all five years. Furthermore, there was a significant decrease in PA among both genders over time with the most marked change in PA occurring during the transition from primary to secondary school.

2.8 Variables associated with physical activity behaviour

Regular PA participation for children and adolescence has clear health-enhancing benefits yet during adolescence PA levels steadily decline and this is more marked in adolescent girls. Therefore, improving our understanding of the factors associated with this decrease in PA behaviour in adolescents is essential. However, PA behaviour is influenced by a variety of factors and no one factor alone can account for this variance in PA behaviour (Sallis, et al., 1992). Furthermore, different factors may be more influential on PA behaviour for certain groups and at different developmental periods, for example adolescent girls.

The majority of research examining factors associated with PA behaviour has been cross-sectional and has therefore identified variables associated with PA behaviour, which are generally referred to as 'correlates' of PA. However, the problem with identifying correlates of PA is causality cannot be inferred and a focus on the 'determinants' of PA behaviour may be more appropriate and provide a more detailed insight into PA behaviour. Determinants are most appropriately defined by Bauman,

Sallis, Dzewaltowski and Owen (2002) as, “causal factors, and variations in these factors are followed systematically by variations in PA behaviour” (p. 6). Yet, Bauman and colleagues (Bauman, et al., 2002) caution that the term ‘determinants’ has often been misused in the context of research findings that have identified statistical associations or predictive relationships, where the term ‘correlate’ should have been more appropriately used. In general, the term ‘correlate’ is now used more frequently in the literature, primarily because quite often many of the variables related to PA behaviour discussed in the research have not been established as true determinants (Biddle & Mutrie, 2008). In general, the correlation coefficient indicates the strength of an association between two variables and values of ± 0.1 represent a small correlation, ± 0.3 represents a moderate correlation and of ± 0.5 represents a large correlation (Field, 2005).

Since early research examining the correlates of PA and exercise by Dishman, Sallis and Orenstein (1985), development in the categorisation of youth and adult correlates of PA behaviour has continued, with the majority of studies using the categories of demographic, biological, psychological, behavioural, social, cultural and physical environment to identify correlates (Taylor, Baranowski & Sallis, 1994; Taylor & Sallis, 1997; Sallis & Owen, 1999; Sallis, 2000; Sallis & Owen, 2002; Biddle, Whitehead, et al., 2005). A comprehensive systematic review by Sallis and colleagues (Sallis, Prochaska & Taylor, 2000) and more recently, a systematic review of the literature with a specific focus on adolescent girls by Biddle and colleagues (Biddle, Whitehead, et al., 2005) provides details of the relevant research studies conducted in relation to the key variables associated with PA behaviour in children and adolescents.

2.9 Demographic variables

Demographic variables can be defined as statistical characteristics of a specific population (Soanes & Stevenson, 2005), for example: age, gender, and socio-economic status.

2.9.1 Age

As discussed earlier, there is a wealth of evidence documenting an age-related decrease in PA from late childhood into adolescence (Gordon-Larsen, et al., 2000; Telema & Yang, 2000; Eaton, et al., 2007). However, in their review of PA correlates in children and adolescents, Sallis, et al. (2000) reported inconsistency in the literature with only 19

out of the 27 studies reviewed showing a negative association between age and PA levels. However, it is important to highlight that all of the studies where age was unrelated to PA were relatively dated and it could be argued that the findings may not be representative of the current PA patterns and behaviours of children and adolescents.

More recent longitudinal research with large cohorts may be more appropriate in determining the influence of age on PA levels. For instance, a study by Brodersen, Steptoe, Boniface and Wardle (2007) examining PA and sedentary behavior in a sample of 5,863 British adolescents aged 11-12 years at baseline assessment indicated marked reductions in PA levels over the 5 year period. Similar findings are evident in other countries, for example, recent data from the National Youth Risk Behaviour Survey in the United States (US; Eaton, et al., 2007) and Finland (Telema and Yang, 2000). Therefore, it is apparent from more recent longitudinal data and the majority of cross-sectional research that age is negatively associated with PA levels in children and adolescents.

2.9.2 Gender

In addition to an age-related decline in PA throughout late childhood and adolescence, there is also evidence that girls are less active than boys (Biddle, Cavill & Sallis, 1998; Telema & Yang, 2000; Trost, et al., 2002). Gender differences in PA levels have been highlighted in studies in the US (Gordon-Larsen, et al., 2000; Eaton, et al., 2007), Europe (Currie, et al., 2004; Riddoch, et al., 2004) and in the UK using both a self-report measure of PA (Inchley, Currie, Todd, Akhtar & Currie, 2004) and accelerometers (Riddoch, et al., 2007). Furthermore, in their review, Sallis, et al. (2000) concluded that out of the 28 studies examining the relationship between gender and PA in adolescents, 27 found boys to be more active than girls. Therefore, from the wealth of research available it is clear that adolescent girls are a specific population at risk of inactivity.

2.9.3 Socio-economic status

Research findings examining socio-economic status as a correlate of PA are relatively limited, especially data from UK studies. In their review, Sallis, et al. (2000) concluded that socioeconomic status was unrelated to youth PA. However, in contrast to this, Biddle, Whitehead, et al. (2005) identified a moderate positive association between PA and socio-economic status assessed by family income and parental education in

adolescent girls aged 10-18 years. It is important to note that all of the studies demonstrating this positive association in the review by Biddle and colleagues were dated from 2000 onwards and this is probably why there are discrepancies in the conclusions made by the two review studies in relation to PA and socio-economic status.

In an examination of the prevalence and correlates of PA behaviours among 2,285 children and adolescents aged 9-13 years in Canada (O'Loughlin, Paradis, Kishchuk, Barnett & Renaud, 1999), indicators of socioeconomic status, assessed by parental employment status and educational attainment, were shown to be related to participation in organised sports outside school but were not related to overall PA participation. More recently, Raudsepp (2006) examined the relationship between socio-economic status, parental support and adolescent PA in 326 Estonian adolescents. Findings highlighted that socioeconomic status was significantly and positively associated with adolescent self-report PA for girls and boys. In the UK, recent findings from the final report of the Physical Activity in Scottish School Children study (PASS; Inchley, et al., 2008) provides further insight into the relationship between socio-economic status and PA in children and adolescents aged 10-14 years of age. Socio-economic status was assessed using the Family Affluence Scale (FAS; Currie, Elton, Todd & Platt, 1997) and participants were then categorised into high, medium and low FAS groups. The findings highlighted that there were no significant differences in self-report PA levels in relation to socio-economic status; however the report did highlight a consistent linear relationship between family affluence and sports club membership. Although there is some evidence available which suggests that socioeconomic factors may be important correlates of PA, there is a clear need for further research in this area.

2.10 Biological variables

Biological variables associated with PA can be defined as physical characteristics of the body, for example shape, size, mass and height. In their review, Sallis, et al. (2000), described the findings regarding the relationship between PA and adolescent body weight and adiposity as 'indeterminate'. In contrast to this, in their review of the correlates of PA in adolescent girls, Biddle, Whitehead, et al. (2005) concluded that in the majority of studies examined, increased Body Mass Index (BMI) was found to be negatively related to PA; however this association was relatively small. Further examination of the research examining the biological variables associated with PA

highlights inconsistency in the research findings and methodological issues in relation to the assessment of physical characteristics.

Early research by Armstrong and Welsman (1990) in 266 British adolescents aged 11-16 years found no association between PA assessed by heart rate monitoring, and skinfold thickness in boys or girls. Furthermore, children classified as overweight were not significantly less active than children who were not classified as overweight. In contrast to these cross-sectional findings, a longitudinal examination of PA and weight changes in a sample of 6149 girls and 4620 boys by Berkley, Rockett, Gillman and Colditz (2003) demonstrated a significant negative association between BMI and PA levels in adolescent girls. Similarly, a recent study by Lohman, et al. (2006) examining the associations of body size and composition with PA in a sample of 1,553 adolescent girls demonstrated negative relationships for all measures of body size and composition, assessed by BMI and skinfold thickness, and PA, assessed by accelerometry.

Research available does suggest that BMI and body fatness are negatively associated with PA yet it is important to note that BMI is not necessarily a good indicator of fatness among children and adolescents and is often a better indicator of heaviness, which may include a major fat-free or lean component (Malina, et al., 2004). Therefore, interpretation of research highlighting BMI as a potential negative correlate of PA should be approached with caution. Furthermore, it has been suggested that obtaining information on waist circumference in children and adolescents could be as useful as BMI to gain an indication of body shape and size (McCarthy, Jarrett & Crawley, 2001), particularly as an indicator of visceral fat. Research examining the relationship between waist circumference and PA in French adolescents aged 12 years highlighted that waist circumference was a negative correlate of PA in early adolescents (Klein-Platat, et al., 2005).

In their early examination of the correlates of PA and interventions in youth, Sallis, et al. (1992) identified that biological differences, in particular pubertal status may be influential on the gender differences in PA levels. Furthermore, they suggested that the biological effects of puberty on PA in adolescents should be a research priority. Despite this suggestion, since then research to date examining the biological variables associated with PA has predominantly focused on the variables of body mass and BMI. Although puberty is characterised by changes in height, body mass and body fatness there are also

a number of other physical changes that occur during maturation that could influence PA behaviour, for example breast development, which may have more of an influence on PA behaviour. Therefore, it could be argued that these reviews are limited in their consideration of the possible influence of other biological variables on PA.

2.11 Psychological variables

According to Biddle and Mutrie (2008), psychological variables relate to intrapersonal influences on PA behaviour. An examination of research concerning psychological variables associated with PA participation in children and adolescents highlights a number of specific correlates that are consistently and positively related to PA behaviour. One key psychological correlate of PA found in a number of studies is enjoyment. Biddle and Mutrie (2008) emphasise that feelings of enjoyment are an important element of motivation, particularly when a degree of physical exertion is involved. From their review findings, Sallis, et al. (2000) identified enjoyment in PE as one of three variables to be targeted for interventions aimed to increase PA in children and adolescents. Similarly, Biddle, Whitehead, et al. (2005) identified a positive association between enjoyment and PA in adolescent girls in seven out of eight studies reviewed. Overall there is a wealth of research highlighting a positive, significant relationship between enjoyment and PA (Carroll & Loumidis, 2001; Motl, et al., 2001; Fairclough, 2003) and recent survey data specifically from Scottish adolescent girls (Biddle, Coalter, et al., 2005) cites enjoyment as the main reason for participating in PA for the majority (73%) of girls aged 11-16 years.

Yet despite empirical evidence suggesting enjoyment is an important influence on PA behaviour in children and adolescents, as a construct it is yet to be fully understood. Furthermore, identification of exactly what contributes to feelings of enjoyment when participating in PA is likely to be more beneficial to further understanding of PA behaviour. In a recent study by Barr-Anderson and colleagues (Barr-Anderson, et al., 2008), factors associated with enjoyment of PE class in middle school girls were examined and their findings highlighted that self-efficacy was the strongest predictor of enjoyment of PE. Therefore, although enjoyment is a positive correlate of PA in children and adolescents, gaining an understanding of the factors that contribute to feelings of enjoyment when physically active and the creation of an enjoyable PA environment may be more pertinent in understanding PA behaviour, particularly in adolescent girls.

Albert Bandura (1986) argued that self-efficacy is the most important determinant of behaviour and defined perceived self-efficacy as, “people’s judgement of their capabilities to organise and execute courses of action required to attain designated types of performances. It is not concerned with the skills one has but the judgements of what one can do with whatever skills one possesses” (p. 391). Since this earlier definition of self-efficacy which focuses predominantly on the ability to carry out a specific task, Bandura has refined the definition to include a social cognitive stance that is representative of the role cognitive processes play in achieving a behaviour. Therefore, from this definition development, Maddux (1995) suggests there are two types of self-efficacy relevant to exercise behaviour. The first is task self-efficacy where simple motor skills or capabilities are assessed, for example jogging a certain distance. The second is self-regulatory efficacy where efficacy is assessed based on potential barriers to achieving a certain behaviour, for example jogging a certain distance even if the weather was bad or the individual was tired.

Despite the theoretical differentiation between the two types of self-efficacy related to exercise behaviour, this has not been fully transferred to the research domain with few studies clearly identifying the type of self-efficacy measured in relation to PA behaviour. Self-efficacy was identified in early research by Sallis, et al. (1992) to be strongly associated with the PA behaviour of adolescents. However, in their subsequent review of the PA correlates of children and adolescents, Sallis, et al. (2000) categorised the relationship between self-efficacy and PA as indeterminate. Yet, more recently, Biddle, Whitehead, et al. (2005) provided further support for the importance of self-efficacy as a correlate of PA behaviour in adolescent girls with review findings identifying a small-to-moderate positive relationship between self-efficacy and PA in all of the studies examined.

There is a wealth of research available highlighting that self-efficacy is a positive correlate of PA behaviour in children and adolescents (Troost, Pate, Ward, Saunders & Riner, 1999; Strauss, Rodzilsky, Burack & Colin, 2001; Loucaides, Plotnikoff & Bercovitz, 2007). Furthermore, PA self-efficacy was reported as an important predictor of future PA behaviour by Troost, et al. (1997) with evidence of gender differences in PA self-regulatory self-efficacy in the findings. For girls, self-efficacy to exercise despite tiredness and homework obligations was the most important predictor of PA compared

to boys where self-efficacy to exercise despite bad weather conditions was most strongly related to PA. This could suggest that self-regulatory self-efficacy is important to consider in addition to task self-efficacy in relation to exercise behaviour. Although the majority of research available examining the relationship between self-efficacy and PA does suggest self-efficacy to be positively related to PA, examination of the sources of self-efficacy beliefs may be more appropriate if we are to understand the influence of self-efficacy on PA behaviour in adolescent girls, particularly if there are possible gender differences in sources of self-efficacy beliefs and self-regulatory efficacy.

Perceived self-efficacy is closely linked to an individual's perceived competence, which relates to an individual's view of their ability to demonstrate competence in a specific area (Harter, 1978). Therefore, perceived physical competence relates to an individual's view of their ability to demonstrate competence in the physical domain (Harter, 1978). Perceived physical competence emerged as a consistently positive correlate of PA in Sallis, et al.'s (2000) review of PA correlates in children and adolescents. Similarly, perceived physical competence was associated with PA in adolescent girls in four out of the five studies reviewed by Biddle and colleagues (Biddle, Whitehead, et al., 2005), with most effects reported being small. More recently, a longitudinal study by Stein, Fisher, Berkey and Colditz (2007) compared PA changes to changes in perceived competence in three domains (social, athletic, and scholastic) in 5260 girls and 3410 boys aged 12-15 years. Findings highlighted a positive association between PA and perceived competence measured in the athletic domain. Furthermore, linear regression models showed that an increase in PA was positively associated with a change in social and athletic self-perception scores in both boys and girls.

A more detailed examination of the relationship between perceived physical competence and PA in 206 Swedish children aged 8-12 years was carried out recently by Sollerhead, Apitzsch, Rastam and Ejlertsson (2008). Perceived physical competence was assessed from two different aspects, perceived physical competence of physical fitness and perceived physical competence in PE. The findings highlighted that PA levels were positively related to perceived competence and there were no gender differences in perceived physical competence in relation to physical fitness. However, boys had higher levels of perceived physical competence in PE than girls, which could suggest that the specific situation of PE is contributing to lower levels of perceived physical competence for girls. However, although this finding is of interest, it is important to point out that

both aspects of perceived physical competence were assessed using a single-item; therefore whether this is representative of overall levels of perceived physical competence in these two areas is questionable.

In the UK, the final report of the PASS study (Inchley, et al., 2008) examined the relationship between perceived physical competence and PA in children and adolescents aged 10-14 years, from P1 to S4, using the eight-item Physical Ability subscale of the Self-Description Questionnaire (Marsh, 1990). Contrary to the findings of Sollerhead, et al. (2008), there was a significant gender difference in all five years, with more boys than girls reporting higher perceived competence. Specifically for girls, those who reported low perceived competence were least active across all five years. Similar observations have been found in a study examining the correlates of PA in Scottish adolescent girls (Biddle, Coalter, et al., 2005) where a lack of perceived competence was related to physical inactivity. Furthermore, lack of perceived competence correlated positively and strongly with feeling uneasy taking part in sport and PA in front of others and negatively with enjoyment, highlighting the overall negative impact a lack of perceived competence can have on PA participation in adolescent girls.

Biddle and Mutrie (2008) state that self-esteem is often seen as the single most important measure of psychological well-being and enhancing self-esteem is likely to lead to an increase in PA participation. According to Fox (1997), self-esteem is, “a global construct that provides an overall statement of the degree to which an individual perceives themselves to be an ‘OK’ person, dependent on whatever criteria that individual uses to determine ‘OK’” (p. xii). However, review findings examining the relationship between PA and self-esteem are inconclusive with Sallis, et al. (2000) concluding that PA was unrelated to self-esteem and more recently, Biddle, Whitehead, et al. (2005) suggested there were too few studies examining the relationship between PA and self-esteem in adolescent girls to draw definite conclusions. However, the recent findings of the Physical Activity in Scottish Schoolchildren study (Inchley, et al., 2008) highlighted a positive relationship between PA and self-esteem as assessed by a modified version of the Rosenberg Self-Esteem Scale (West & Sweeting, 1997) in both boys and girls.

Although research evidence on the relationship between PA and global measures of self-esteem is inconsistent, examination of the relationship between PA and self-esteem in

the physical domain does allow a more detailed understanding of the relationship between PA and aspects related to physical self-esteem. Aspects of self-esteem in the physical domain have been shown to have a positive relationship with PA, for example physical self-worth, perceived body attractiveness and body image. Due to a lack of research in the area at the time, an examination of the relationship between PA and physical self-worth was not included in the systematic review by Sallis and colleagues (Sallis, et al., 2000). However, more recently Biddle and colleagues (Biddle, Whitehead, et al., 2005) did identify three studies which all showed a small-to-moderate positive relationship between physical self-worth and PA in adolescent girls. Similarly, Inchley and colleagues (Inchley, et al., 2008) found that there was a positive relationship between PA participation and physical self-worth for adolescent girls from P7 through to S4.

Body image and perceptions of body attractiveness are aspects of the physical self that contribute to overall feelings of physical self-worth. Body image can be defined as, “the mental representation an individual has of their body” (Fox, 1997, p. xii) and, according to Fox (1997), perceptions of body attractiveness are characterised by perceptions of an attractive physique, ability to maintain an attractive physique and confidence in appearance. According to the review findings of Sallis and colleagues (Sallis, et al., 2000), perceived physical appearance and body image were unrelated to PA in children and adolescents. In their systematic review of PA correlates of adolescent girls, Biddle and colleagues (Biddle, Whitehead, et al., 2005) examined perceptions of body attractiveness and appearance importance/concerns as separate constructs. Findings highlighted that PA was consistently associated with more positive perceptions of body attractiveness. In addition, concerns expressed about body weight and appearance showed a small-to-moderate positive association with PA.

Contrary to these findings, an examination of factors associated with changes in PA in adolescent girls (Neumark-Sztainer, Story, Hannan, Tharp & Rex, 2003) found no association between PA and body satisfaction. Similarly, recent findings from the PASS study (Inchley, et al., 2008) revealed no significant association between PA and body image for boys or girls from P7 through to S4. As highlighted in the inconsistency in the research findings, the relationship between body image and perceptions of body attractiveness and PA is complex. It is possible that an individual’s perceptions about their body can have both a positive and negative effect on their PA behavior and a clear

limitation in the research area, particularly from the two reviews available, is the reliance on cross-sectional research where causality cannot be determined.

2.12 Behavioural variables

Behavioural variables relate to any behaviours or actions an individual may participate in that could be related to PA behaviour. Sallis, et al. (2000) examined the relationship between 30 different behavioural variables and PA which included smoking, diet, alcohol use, sedentary activities, and the only consistently positive associations were found for sensation seeking, previous PA and involvement in community sport. Contrary to these findings, Biddle, Whitehead, et al. (2005) identified smoking as a moderate negative correlate of PA participation; however, in support of the findings by Sallis, et al. (2000), sedentary behaviours in the form of television (TV) viewing/internet use had an indeterminate association with PA.

Sedentary behaviours, such as TV viewing and internet and computer game usage, are frequently being blamed for keeping young people from being active (Sallis, et al., 1992). Early research proposed a ‘displacement hypothesis’ (Mutz, Roberts & van Vuuren, 1993) which suggests that sedentary behaviours replace the time that would be otherwise used for PA participation, which contributed towards the decrease in PA levels in children and adolescents. However, a meta-analysis of studies exploring TV viewing, video/computer game use, body fatness and PA among samples of children and youth aged 3-18 years found only a non-significant small, negative relationship between TV viewing and PA in all of the studies (Marshall, Biddle, Gorley, Cameron & Murdey, 2004). Furthermore, Biddle (2007) suggests that such findings emphasise the importance of considering that there is time for both sedentary and active behaviours throughout the day. Therefore, from the research available it could be argued that the concept of sedentary behaviours ‘displacing’ PA is no longer appropriate and further consideration of both sedentary and active behaviours alongside one another may be more important in understanding PA behaviour in children and adolescents.

2.13 Social and cultural variables

Lox, Martin Ginis and Petruzzello (2006) define social support as, “the perceived comfort, caring, assistance and information that a person receives from others” (p.106) and it has previously been cited as one of the most important correlates of PA in children and adolescents (Sallis, et al., 1992; Taylor & Sallis, 1997). Social support can

include support from peers, siblings, parents and teachers and can be categorised into several types of support: emotional, informational and material support (Taylor, et al., 1994). Emotional support is encouragement and empathy from others in attempts to be physically active. Informational support consists of information and advice given by others concerning PA and material support is direct help, such as driving children to an after-school club. In the review by Sallis, et al. (2000), parental support was examined in the areas of parental encouragement and persuasion (emotional support) and parental support for PA travel and costs (material support). In the findings, all types of parental support were shown to be positively associated with PA behaviour in adolescents. Similarly, Biddle and colleagues (Biddle, Whitehead, et al., 2005) identified family and parental support as a positive correlate of PA behaviour for adolescent girls.

In support of the review findings, Heizler, Martin, Duke and Huhman (2006) identified that in addition to parental support and encouragement, parental awareness of the importance that their child participates in PA had a significant influence on their child's PA participation in a US national sample of children aged 9–13 years of age. This finding is comparable to data examining the social-psychological factors influencing PA behaviour in Scottish adolescent girls. Whitehead, Biddle, O'Donovan and Nevill (2006) found that for 11- to 13-year-olds, mother's participation and the positive importance of PA were identified as being most important in separating between highly active and low-moderately active girls. Recently, the PASS study (Inchley, et al., 2008) examined parental influences on PA by focusing on both paternal and maternal support for PA. Findings highlighted that as girls became older, support for PA from both mothers and fathers no longer had a significant influence on their PA behaviour. Therefore, the research evidence does suggest that during early adolescence parental support is influential on PA behaviour in adolescent girls. However, by mid- to late-adolescence the relative importance of parental influence on PA behaviour tends to decline and it is possible that the influence of others, for example peers, may become more important. This is further supported by previous research which also suggests that during adolescence, peers become a powerful social influence, more so than family members (Wold & Anderssen, 1992; Springer, Kelder & Hoelscher, 2006; Hohepa, Scragg, Schofield, Kolt & Schaff, 2007).

In addition to parental support, parental participation in PA has been suggested as a potential correlate of PA in adolescents. However, Sallis, et al. (2000) examined both

parental PA and parental PA participation with their children and concluded the relationship of these variables with actual PA behaviour of adolescents was indeterminate. Similarly, in their review findings, Biddle, Whitehead, et al. (2005) described the relationship between the PA behaviour of adolescent girls and mother's PA as indeterminate yet there was a small-to-moderate positive association with father's PA participation. In a recent review study by Van der Horst, Paw, Twisk and Van Mechelen (2007), examining correlates of PA and sedentary behaviour in youths aged 13-18 years, there was no association evident between parental PA participation and adolescent PA participation. However, more recent research from the Avon Longitudinal Study of Parents and Children (ALSPAC) suggested that mothers' PA during pregnancy and early in the child's life showed a modest association with physical activity of the child at age 11-12 years, suggesting that active parents tend to raise active children (Mattocks, et al., 2008). Therefore, from the contrary research evidence available it is difficult to ascertain whether actual parental participation in PA is positively associated with the PA behaviour in adolescents.

Review findings on the relationship between peer support and PA are less convincing than parental support. Sallis, et al. (2000) concluded that peer modelling and PA were unrelated and the relationship between perceived peer support and PA was indeterminate. In support of these findings, Biddle, Whitehead, et al. (2005) also described their review findings of the association between peer-related variables and PA as inconclusive. Despite the review findings suggesting that peer support has no influence on PA behaviour, it is important to note that these reviews are based on studies examining a variety of peer-related variables and PA, including peer support, peer influence, peer acceptance of PA, peer attitudes and peer modelling. Therefore, these conclusions are made by drawing all these variables together under the broader category of 'peer support' when it may be more appropriate to examine these variables independently as they don't all necessarily have the same relationship with PA behaviour. Furthermore, considering the influence of peer support for 10-18 year olds as a whole may be inappropriate as this relationship may change with age.

Overall both parental and peer support play an important role in influencing the PA behaviour of adolescents, with the relative importance of each on PA behaviour changing during the period of adolescence. Therefore, receiving a combination of emotional, informational and material support from a variety of sources appears to be

critical in determining PA behaviour during adolescence. Following a recent review of environmental correlates of PA in youth, Ferreira, van der Horst, Wendel-Vos, van Lethe and Brug (2007) concluded that support from significant others is a consistent positive correlate of PA. Furthermore, support for PA from peers, parents and teachers was identified as a strong, consistent factor associated with change in PA in inactive adolescent girls (Neumark-Sztainer, et al., 2003). Despite the literature emphasising the importance of social support, Biddle and colleagues do recognise the need for further research in this area and identify the importance of reflecting a 'family culture' of PA participation during adolescence.

2.14 Physical environmental variables

The physical environment in which people live is defined by Sallis and Owen (2002) as the space outside the person. Examples of physical environment variables that could influence PA behaviour include: the weather; availability of sports equipment; sports facilities and how these impact on PA participation rates. Generally, the research on the influence of the physical environment on PA behaviour is limited, with research findings often being inconclusive, particularly with regards to children and adolescent PA behaviour. In their review findings, Sallis, et al. (2000) found opportunities to exercise in the physical environment to be positively related to PA behaviour, yet equipment availability for PA was deemed as being unrelated. In their review of the PA correlates of adolescent girls, Biddle and colleagues (Biddle, Whitehead, et al., 2005) concluded that no one physical environmental variable was studied sufficiently to draw firm conclusions.

Weather has been previously identified as a barrier to PA (Sallis, Bauman & Pratt, 1999) and recently, Tucker and Gilliland (2007) conducted a systematic review of studies which have specifically examined the effect of season and weather on PA. From the review, the authors identified that the majority of studies focusing on adolescents found that their PA levels decreased in the autumn and winter months compared to the spring and summer months (Bitar, Fellmann, Vernet, Coudert & Vermorel, 1999; Loucaides, Chedzoy, Bennett & Walshe, 2004; Santos, Matos & Mota, 2004) with only one study (Gordon-Larsen, et al., 2000) suggesting there were no major effects of seasonality on PA. Tucker and Gilliland (2007) concluded that there is a need to account for the influence of the weather when developing PA interventions, particularly taking into account that PA participation during winter may be lower than the summer because

winter activities may be less convenient and accessible, both physically and financially (Merrill, Shields, White & Druce, 2005).

In a review of environmental factors associated with adult PA participation (Humpel, Owen & Leslie, 2002), there was evidence of significant associations between PA and aspects of the physical environment, for example, ease of access to facilities, having places nearby to be active and perceived positive aesthetics of the local area. Yet to date there is no known research examining the influence of the aesthetic aspects of the physical environment on PA behaviour in children and adolescents. In relation to the safety aspects of the physical environment, Ferreira, et al. (2007) conducted a review of environmental correlates of PA in youths, where findings highlighted that low crime incidence was characteristic of the neighbourhood environment associated with higher PA. Furthermore, the responses of 73 adolescent girls during focus group research by Dwyer, et al. (2006) suggested that parental concerns regarding their safety deterred them from PA participation. In addition, as a result of findings from a US national sample of correlates of PA in children aged 9-13 years, Heitzler, Martin, Duke and Huhman (2006) suggest that ensuring the provision of safe and accessible environments is essential in order to encourage PA participation.

2.15 Summary of associated variables

It is clear that there is a wealth of literature available addressing the factors that influence PA behaviour in children and adolescents. As a result of the literature reviewed, Table 2.1 provides a summary of all the known variables associated with PA behaviour in children and adolescents.

Table 2.1: Variables known to be associated with physical activity in adolescents

Category of variable	Correlate	Association
Demographic	Age	-
	Gender (female)	-
	Socio-economic status	+
Biological	Body Mass	-
	Body Mass Index	-
	Body fat (skinfold thickness)	-
Psychological	Enjoyment	+
	Self-efficacy	+
	Perceived competence	+
	Self-esteem	+
	Body image/body attractiveness	?
Behavioural	Participation in organised sport	+
	Previous PA	+
	Sensation seeking	+
Social and cultural	Parental encouragement and persuasion to be active	+
	Parental support for PA travel and cost	+
	Peer support (peer acceptance of PA, peer attitudes and peer modelling)	?
	Father's PA participation	?
	Mother's PA participation	?
Physical environment	Poor weather conditions	-
	Safe neighbourhood	+
	Accessible PA facilities	+

Note: +, positive association; -, negative association; ?, association is indeterminate

2.16 Conclusion

The health benefits of PA for children and adolescents have been well-documented and current UK guidelines suggest that children and adolescents should participate in PA of at least moderate intensity for 60 minutes a day in order to achieve these health benefits. However, the wealth of research evidence world-wide from self-report questionnaires

and surveys suggests that children and adolescents are failing to meet these PA guidelines and their PA levels decline throughout adolescence. Furthermore, there is a significant gender difference in PA levels with girls being less active than boys. Recent research findings in Scotland have highlighted that this decrease in PA for adolescent girls is most marked during the transition from primary school to secondary school. Modifiable variables associated with PA during adolescence may be considered as potential mediators of PA behaviour yet understanding the PA behaviour of adolescent girls is a difficult and complex issue, where attempting to examine all correlates of their PA behaviour is impractical. In addition, Biddle and colleagues (Biddle, Whitehead, et al., 2005) advocate that future research needs to examine the interaction of correlates rather than variables in isolation. Therefore, a focus on possible interrelated variables is worthy of further investigation to understand the decrease in PA behaviour in adolescent girls during the transition from primary to secondary school.

CHAPTER 3: LITERATURE REVIEW – MATURATION, THE PHYSICAL SELF AND PHYSICAL ACTIVITY

3.1 Introduction

Physical activity (PA) behaviour in girls declines dramatically during adolescence and research has highlighted that it is most marked during the transition from primary to secondary school. Yet PA behaviour is complex, and there are likely to be numerous variables associated with the decrease in PA evident. Recently research has turned its attention towards examining the interaction of variables rather than considering their isolated influence on PA behaviour. Following the review of variables associated with PA behaviour, two such correlates that may be interrelated are biological and psychological variables. Biological variables (e.g., maturation) are typically viewed as non-modifiable determinants of PA behaviour. However, the psychological variables (e.g., perceptions of competence, body image) related to how individuals experience their biology are modifiable. Furthermore, such biological variables may have a direct influence on PA behaviour or may be indirectly related through these psychological variables. Therefore the following chapter will explore the relationships between maturation, the physical self and PA behaviour. Firstly, the chapter will look at the potential relationship between maturation and PA. The chapter will then move on to discuss the conceptualisation of the physical self and the relationship between perceptions of competence and PA behaviour. The research examining physical self-perceptions and maturation will follow and the chapter will conclude with a summary of the research examined and provide details of the overall research aims.

3.2 Maturation and physical activity

As highlighted in the previous chapter, research examining the biological variables associated with PA has predominantly focused on measures of body mass, Body Mass Index (BMI) and body fat. Despite maturation being characterised by a number of physical changes in addition to increases in body mass, height and changes in body composition, there has been limited research on puberty and maturation as potential correlates of PA behaviour in adolescents. It is common within the literature for the terms puberty and maturation to be used interchangeably; however they should be considered as separate constructs. Maturation refers to the timing and tempo of progress towards the mature biological state, which includes completion of somatic, skeletal and sexual maturation whereas puberty is a transitional period in the process of sexual

maturation between childhood and adulthood (Malina, et al., 2004). Therefore, biological maturation encompasses somatic, skeletal and sexual maturation whereas puberty is related to the process of sexual maturation during adolescence. Similarly, adolescence is a term frequently used not only in scientific literature but in everyday settings and situations. Dorn, et al. (2006) define adolescence as the interval between childhood and the assumption of adult roles and responsibilities, encompassing a broad interval of maturation involving physical, mental and emotional development, as well as coincident cognitive changes and changes in social roles. Therefore, adolescence can be viewed as a broader term beyond biological maturation which includes social, cultural, cognitive and psychological changes that occur between childhood and adulthood.

3.2.1 Indicators of biological maturation

The three most commonly used indicators of biological maturation are skeletal maturation, sexual maturation and somatic maturation. The assessment of skeletal maturity is based on an x-ray of an individual's wrist to identify the degree of bone and cartilage development. Skeletal maturation is an ideal indicator of maturation because maturation of the skeleton spans the entire period of growth (Malina, et al., 2004); however due to issues surrounding expense, requirement of specialised equipment and radiation concerns it is rarely used as a maturity indicator outside of a clinical setting. However, both sexual and somatic maturation are commonly used as maturity indicators in non-clinical populations and will therefore be discussed in more detail.

3.2.2 Sexual maturation

Sexual maturation refers to a continuous process that begins at sexual differentiation in the embryo through puberty to full sexual maturity of the physical characteristics of reproduction (Baxter-Jones & Sherar, 2007). The primary sexual characteristics are considered as the development of the ovaries and testes and the secondary sexual characteristics most frequently assessed are breast development in girls, penis and testes development in boys, and pubic hair development in both sexes. Secondary sexual characteristics are used because they are a visible manifestation of sexual maturity at a given period of time (Baxter-Jones & Sherar, 2007). A number of measures have been developed to assess sexual maturation based on the development of secondary sexual characteristics, including Tanner's Sexual Maturation Scale (SMS; Tanner, 1962) and the Pubertal Development Scale (PDS; Petersen, et al., 1988).

Based on the work of Reynolds and Wines (1951), Tanner (1962) conducted longitudinal evaluations of adolescents' development of secondary sex characteristics and assigned adolescents to five ordinal stages based on these characteristics, which resulted in the SMS. Initially, the Tanner SMS was designed for use by a trained physician who would conduct a physical examination assessing the developmental stage of each of the secondary sex characteristics and has been traditionally considered as the gold standard against which all other methods of assessing sexual maturation are measured (Dubas, Graber & Petersen, 1991; Carskadon & Acebo, 1993; Dorn, et al., 2006). However, due to its invasive nature, the feasibility of using this measure in non-clinical settings is relatively low.

3.2.3 Pubertal Development Scale

In response to the need for an integrative, non-invasive assessment of pubertal processes, Petersen and her colleagues (Petersen, et al., 1988) developed the PDS. The development of the PDS was based on a sample of 335 boys and girls aged 11-12 years who were interviewed twice annually over a three year period in relation to their physical development, based on the Tanner SMS. From the interview findings, a dichotomous response scale was developed for the characteristics of growth spurt in height, pubic hair and skin changes for both boys and girls; facial hair and voice change in boys only; and breast development and menarche in girls only. Therefore, pubertal development on each item is rated on a four-point scale where: 1, no development; 2, development has just begun; 3, development is definitely underway and 4, development is complete. An exception to this is menarche, which is rated dichotomously as pre- or post menarchal and scored as 1 and 4 respectively.

Since its development, the PDS has been shown to be a valid and reliable measure of self-report pubertal status, used in several research studies (Carskadon & Acebo, 1993; Broderson, et al., 2005; Bond, et al., 2006). Due to the ethical restraints and costs involved that frequently prevent either subjective or objective assessment of Tanner staging, the PDS is viewed as one of the most accessible tools available to researchers involved in the assessment of maturation. Furthermore, during the original development of the PDS, Petersen, et al. (1988) recognised that this measure is most appropriate for use in longitudinal studies in which the objective is to track young people's pubertal development over several years and when more direct measures are not available or acceptable for the research. Therefore, a major strength of the PDS is its use for large

cross-sectional studies in which general maturational information is desired or long-term longitudinal studies in which detail on maturational change is necessary (Brooks-Gunn, Warren, Rosso & Gargiulo, 1987).

Despite the extensive use of the PDS in the assessment of maturation it is important to acknowledge that it does have its limitations. Dorn, et al. (2006) commented that it may be limited in its ability to capture early changes of pubertal development, for example increases in hormone levels without any visible signs of puberty, which is apparent in pubic hair development which can occur from the age of 6 years. In addition, a major limitation of any self-report measure is the issue of social desirability bias, which could be further enhanced if the participants are completing the PDS in a school setting alongside their peers rather than a clinical setting.

3.2.4 Somatic maturation

Somatic maturation refers to the maturation of parts of the body in relation to size and shape, for example height and body mass. Standing height or stature is a linear measurement of the distance from the floor, or standing surface, to the top of the skull and is the most widely used indicator of somatic growth because of its relative ease in measurement. At 10 -12 years of age, children are approximately 84% of their total adult height and the age at maximum rate of growth during the adolescent growth spurt in height is known as Peak Height Velocity (PHV), which is often considered the most commonly used indicator of somatic maturation (Malina, et al., 2004). On average, girls attain PHV approximately 2 years earlier than boys with the onset of the growth spurt occurring between the ages of 8.2 and 10.3 years, with PHV usually being reached between 11.3 and 12.2 years.

Body mass comprises of composite tissue, including fat mass and fat-free mass that accrue at different rates and times. In boys, the growth spurt in body mass is primarily due to gains in muscle mass and skeletal tissue, with fat mass remaining relatively stable. On average, relative muscle mass increases from 42-54% in boys from 5 to 17 years of age. However, for girls, they experience a less dramatic increase in muscle mass and skeletal tissue but encounter a continuous rise in fat mass during adolescence. For girls, from the age of 5 to 13 years of age, muscle mass increases from 40-45%; however percentage muscle mass then starts to decline from the age of 13 years due to the increase in fat accumulation during adolescence. A longitudinal study by Guo,

Chumlea, Roche and Siervogal (1998) examined patterns of changes in body composition from 8 to 20 years of age. Their findings highlighted that at age 9 years males had approximately 14% body fat which then increased to 17% at the age of 12 years and subsequently declined throughout adolescence due to an increase in fat free mass. However at age 9 years girls had approximately 20% body fat which subsequently increased throughout adolescence reaching 27% at age 20 years. Therefore, compared to their male counterparts of a similar chronological age, girls have an increased percentage of fat mass compared to fat free mass throughout adolescence.

3.2.5 The influence of maturation on physical activity

As outlined in Chapter 2, PA levels dramatically decline during adolescence, particularly in adolescent girls, and this documented decrease in PA is coincident with the onset of biological maturation. However, for boys and girls, the onset of maturation occurs at different times during adolescence, with girls maturing on average two years earlier than boys (Malina, et al., 2004). Therefore, it could be argued that the marked decline in PA in girls compared to boys of a similar chronological age could be attributed to the earlier onset of maturation and the accompanying physical changes that occur. For girls, biological maturation results in a variety of physical changes that may be generally opposed to PA participation, for example, there is an increase in fat accumulation which is not matched by an increase in lean muscle mass from the age of 13 years old. Furthermore, Malina, et al. (2004) highlight that later maturing girls tend to be taller, have relatively narrower hips and longer legs compared to early maturing girls who tend to have wider hips and shorter legs. These maturational differences in physical characteristics of body shape and size may directly impact on girls' ability to take part in PA. For example, breast development may directly reduce spontaneous PA because of the need for appropriate clothing (Baker, et al., 2007) and an increase in fat mass may deter girls from wanting to participate in activities that reveal their bodies to others, for example swimming. As a result early-maturing girls may self-select out of certain sports (Baker, et al., 2007).

Yet despite this coincidental existence of a decrease in adolescent girls' PA and the onset of maturation, research examining the direct influence of maturation on PA is relatively limited and often the findings are contradictory. Early research by Armstrong, Balding, Gentle and Kirby (1990) examined the PA patterns of 266 British children aged 11-16 years old. Their findings suggested that pubertal status, assessed by Tanner

staging, had no influence on sustained periods of objective PA in both boys and girls. In contrast, an examination of changes in both PA behaviours and sedentary behaviours of 2,200 adolescents from age 8-16 years was conducted by Bradley, et al. (2000). PA behaviour was assessed using the Know Your Body Health Habits Questionnaire (Williams, Carter & Eng, 1980) and the Compendium of Physical Activities Questionnaire (Ainsworth, et al., 1993) and pubertal status was assessed using the PDS (Petersen, et al., 1988). The findings highlighted that early maturation predicted more sedentary activity in girls aged 11-14 years, suggesting that sedentary behaviour is related to more advanced maturation in adolescent girls. In addition, Bradley and colleagues also found that girls often reported most vigorous PA behaviour around the age of 9 years and that the reports of vigorous PA started to decrease around the age of 10-11 years, coincident with the onset of maturation. The authors suggest that the relationship between puberty and activity choices could reflect the social norms surrounding physical maturity that would direct early maturers toward more social activities and away from physical activities. This concept is supported by Goran, Gower, Nagy and Johnson (1998) who suggest that as young girls approach puberty, there may be a decrease in social desirability of PA which could lead to a reduction in average energy expenditure.

More recently, Baker, et al. (2007) conducted a longitudinal examination of 143 girls aged 11 and 13 years in relation to pubertal maturation and PA. Pubertal maturation was classified using a combination of subjective and objective measures which were then combined to obtain an overall index of pubertal status. The girls' breast development was assessed using the SMS (Tanner, 1962), where assessment was carried out by a trained nurse. The girls' mothers provided information on their daughter's pubertal development using the PDS (Petersen, et al., 1988) and objective assessment of maturation was obtained by measuring oestrodial from blood samples taken. From this the girls were classified as having either earlier or later pubertal timing at age 11 years relative to the overall sample, thus gaining a normative measure of pubertal status. PA was assessed using the self-report Children's PA Scale to obtain a subjective measure of PA and objective assessment of PA was obtained using an Acti-Graph 7164 accelerometer (Shalimar, FL). The findings highlighted that early-maturing girls, relative to their peers at age 11, had significantly lower PA at age 13 years compared to their later-maturing peers. In addition, the identified associations were not driven by pre-established levels of PA (i.e. low-active girls maturing more quickly than high-active

girls) or pre-established body fat (i.e. girls who are more overweight and more sedentary going through puberty earlier than their leaner peers), which has been suggested as a contributing factor by some researchers (Veronesi & Guerresi, 1994).

Wickel and Eisenmann (2007) recently examined the relationship between maturity status and PA in a sample of 167 older adolescents aged 13-14 years. Mirwald, et al.'s (2002) maturity offset was used to provide an indication of pubertal timing between individuals in the population sample which estimates the number of years from PHV based on anthropometric measures. Therefore, participants were classified as either early or late maturers relative to the population sample based on their estimate age at PHV. Habitual PA over a seven day period was measured using a pedometer to obtain an average pedometer step count for the week. The findings indicated that there was an apparent step-wise decline in PA among early, average and late maturers. However, the average amount of pedometer-determined PA was not significantly different between early, average and late maturing boys and girls. The authors do suggest that the lack of significant results could be due to the relatively small sample size for the early (n=6) and late (n=6) maturers groups.

3.3 The physical self and physical activity

Self-esteem is often seen as the most important indicator of psychological well-being (Biddle & Mutrie, 2008). Regular participation in PA is likely to lead to an enhancement in self-esteem with some research highlighting a positive association between PA and self-esteem in children and adolescents (Calfas & Taylor, 1994; Inchley, et al., 2008). An understanding of self-esteem in the physical domain is of additional relevance in relation to PA behaviour as it is the body and the physical self through which this behaviour occurs. Therefore, an examination of physical self-esteem may be more appropriate in understanding PA behaviour in adolescent girls than global self-esteem.

3.3.1 Introduction to the self

The self relates to a complex system of constructs (Fox, 2000) encompassing both descriptive and evaluative elements. The self-description aspect is known as the self-concept and is defined by Fox (1997) as, "the individual as known to the individual" (p. xii). It is simply how we define ourselves (i.e. 'who I am') and this can often comprise of more than one role. Self-esteem relates to the evaluative outcome of the self-concept (i.e. 'how I feel about who I am') and is often used synonymously with the term self-

worth (Fox, 1997). Both self-concept and self-esteem are considered to be global constructs within the self-system as they can both influence and be influenced by other constructs. The psychological construct of the self-concept is often affected by the assumption that ‘everybody knows what it is’, therefore researchers have often neglected to provide any theoretical definition of what they are measuring or to evaluate the psychometric properties of responses to their measures (Marsh, 1997). Early perspectives on the self-system viewed self-concept or self-esteem in a simplistic and uni-dimensional way until Epstein (1973) pioneered the idea that the self was actually multi-dimensional in nature. As a result, over the last twenty years a number of multidimensional and hierarchical models of self-concept and self-esteem have been proposed (e.g., Harter, 1982; Marsh, 1990, 1993; Marsh, Byrne & Shavelson, 1992; Bracken, 1996).

From the development of multi-dimensionality in self-concept research, the work of Shavelson, Hubner and Stanton (1976) resulted in a marked advancement in the formation of an actual construct definition of the self-concept. By integrating various definitions available, Shavelson, et al. (1976) developed a multi-dimensional, hierarchical and theoretical definition of the self-concept. They described self-concept as a person’s self-perceptions that are formed through experiences with and interpretations of his/her environment, therefore comprising of both a descriptive and evaluative dimension. Conceptualisation of the proposed self-concept based on a school-aged group of children is shown in Figure 3.1. Within this model of self-concept, the sub-domains are specific to school-aged children and at the apex of this model is general or global self-concept, representing the individual’s overall sense of self. At the second level, Shavelson and colleagues postulate self-assessments by the individual in the specific domains of academic and non-academic self-concept (comprised of the social, emotional and physical domains), thus resulting in the third level of an individual’s sense of self within particular sub-domains. Overall, Shavelson, et al.’s (1976) multi-dimensional, hierarchical model provided an important basis for the development of subsequent multi-dimensional self-concept measures and self-description instruments (Byrne, 1994; Wylie, 1989; Marsh, 1992).

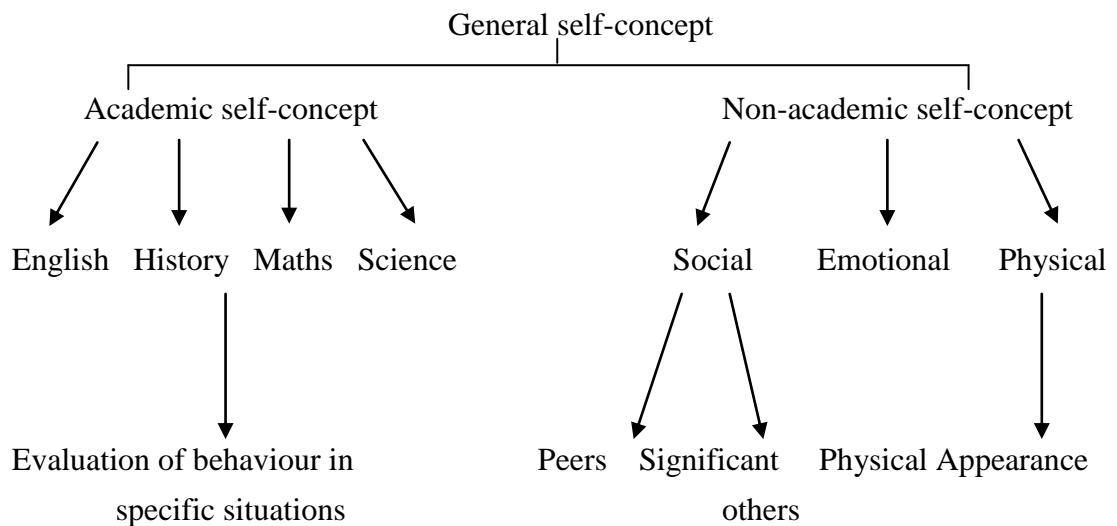


Figure 3.1: A hierarchical structure of the self-concept (Shavelson, et al., 1976)

Similar to earlier views on the conceptualisation of the self-concept, instrumentation to assess the self-concept also lacked a multi-dimensional approach (Wylie, 1989). However, since then instruments such as Harter’s Self Perception Profile (Harter, 1988) and Marsh’s Self-Description Questionnaire (Marsh, 1992) have been developed that assess several subscales relating to different dimensions of the self-concept. As a result, global self-concept is measured as a separate construct and related dimensions of the self-concept are separately assessed through sub-scales to obtain overall scores, for example work, academic, physical and social self-concept domains.

3.3.2 Assessment and conceptualisation of the physical self

The physical self relates to an individual’s sense of self in the physical domain. Similar to the self-system, the physical self is comprised of a descriptive dimension, physical self-concept, and an evaluative dimension, physical self-esteem. The physical self was accounted for in Shavelson, et al.’s, (1976) hierarchical model of the self-concept in the form of broad measures of physical appearance and physical competence. Additionally, of the five specific subscales in Harter’s Self-Perception Profile for Children (1985), two focused on the physical domain, specifically the subscales constructed to measure perceptions of athletic competence and physical appearance. However, until the late 1980’s, there was little attention on more detailed, comprehensive methods of understanding and measuring the physical self. Therefore, although the physical self is seen as an integral part of the structure of the self as a whole, Fox (1997) suggested it is open to independent enquiry. As a result, there has been considerable advancement in

the development of multi-dimensional physical self-concept instrumentation, which reflects theoretical developments and has allowed a more complete depiction of perceptions in the physical domain. Three such instruments are the Physical Self-Concept Scales (PSC; Richards, 1987), the Physical Self-Description Questionnaire (PSDQ; Marsh, Richards, Johnson, Roche & Tremayne, 1994) and the Physical Self-Perception Profile (PSPP; Fox & Corbin, 1989). According to Ostrow's (1990) directory, the PSPP is the strongest multi-dimensional physical self-concept instrument and of the three mentioned above, the PSPP has been used most extensively, particularly in research with children and adolescents (Welk & Eklund, 2005).

The PSPP and the conceptualisation of the physical self-perception hierarchy were developed together by Fox and Corbin (1989) and presented together in the PSPP Manual (Fox, 1990). Therefore, for the purpose of the following literature review they will be discussed together. On recognising the potential of the body to influence self-esteem and health-related behaviours, Fox and Corbin (1989) sought to explain the dimensions of the physical self in more detail. Therefore, drawing from work by Harter (1985; 1986) on the Self-Perception Profile for Children and Shavelson, et al.'s (1976) hierarchical structure of the physical self-concept, Fox and Corbin (1989) developed the PSPP, a multidimensional measure of an individual's self-rating along several salient elements in the physical domain. Fox and Corbin (1989) determined the most important elements of the physical self by reviewing previous research and collecting open-ended responses from university students about the significant components of the physical self.

As a result, four sub-domains were identified which are sport (athletic ability, ability to learn sport, confidence in sport); condition (condition, stamina, fitness, ability to maintain exercise, confidence in an exercise setting); body (attractive physique, ability to maintain an attractive body, confidence in appearance) and strength (perceived strength, muscle development, confidence in situations requiring strength). A fifth sub-domain represents a global or general measure of physical self-worth and it is proposed to mediate the relationship between the sub-domains of physical self-perceptions and perceptions of general or global self-esteem (general feelings of pride, satisfaction, happiness and confidence in the physical self). Figure 3.2 shows the conceptualisation of the hypothesised three-tier hierarchical organisation of self-perceptions in the physical domain.

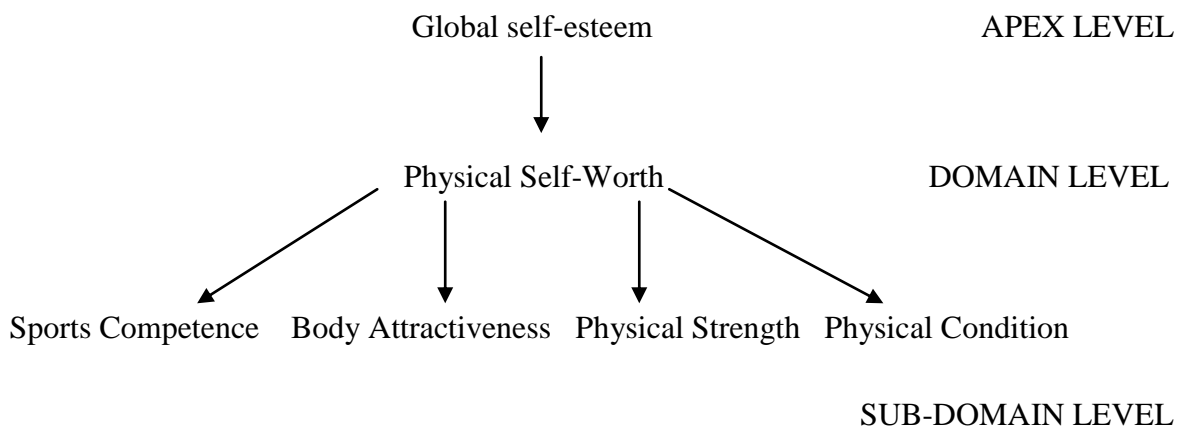


Figure 3.2: Physical Self-Perception hierarchy (Fox and Corbin, 1989)

Fox and Corbin (1989) adopted a four-choice structured alternative item format for the PSPP, as used in Harter’s self-concept instrument and it is intended to reduce socially desirable responses (Harter, 1985). The item score can range from 1 (low) to 4 (high) on a structured alternative scale, offering two opposing statements. For example, “Some people feel that they are not very good when it comes to playing sports” *but* “others feel that they are good at just about every sport”. The participant has to select which of two statements best describes them and then they have to decide to what degree they are that kind of person, indicating whether it is “really true for me” or “sort of true for me”.

Subsequent work with the PSPP supports its utility among young adults (Sonstroem, Speliotis & Fava, 1992) and older adolescents (Welk, Corbin & Lewis, 1995) and has been shown to demonstrate good cross-cultural validity in a number of countries, using multiple samples from different cultural groups (Hagger, Lindwall & Asci, 2004; Hagger, Biddle, Chow, Stambulova & Kavassanu, 2003; Crocker, et al., 2000; Hagger, Ashford & Stambulova, 1998; Biddle, et al., 1993). The factor validity of the PSPP across a variety of samples and age groups has been supported by confirmatory and exploratory analyses (see Fox, 1998).

In relation to the conceptualisation of the physical self, Fox (1990) argued that, consistent with a hierarchical model similar to Shavelson, et al. (1976), self-perceptions can vary from one level to another and can be measured successfully at various levels of specificity, as shown in Figure 3.3, where the super ordinate level is global self-esteem moving down to a specific domain of physical self-worth/self-esteem. Within this domain there are several sub-domains including sport competence, body attractiveness,

physical strength and physical condition. Dependent on the sub-domain, the next level of specificity is a facet or aspect of the sub-domain which can often be broken down further into a sub-facet or can even be situation-specific. For example, an improvement in levels of competence defending a penalty corner in field hockey, which is situation-specific, in consecutive games may lead to an increase in defending efficacy, leading to an increase in perceived defending competence. Over time, this may then generalise to enhanced perceived competence in field hockey and sport which could contribute to overall physical self-worth.

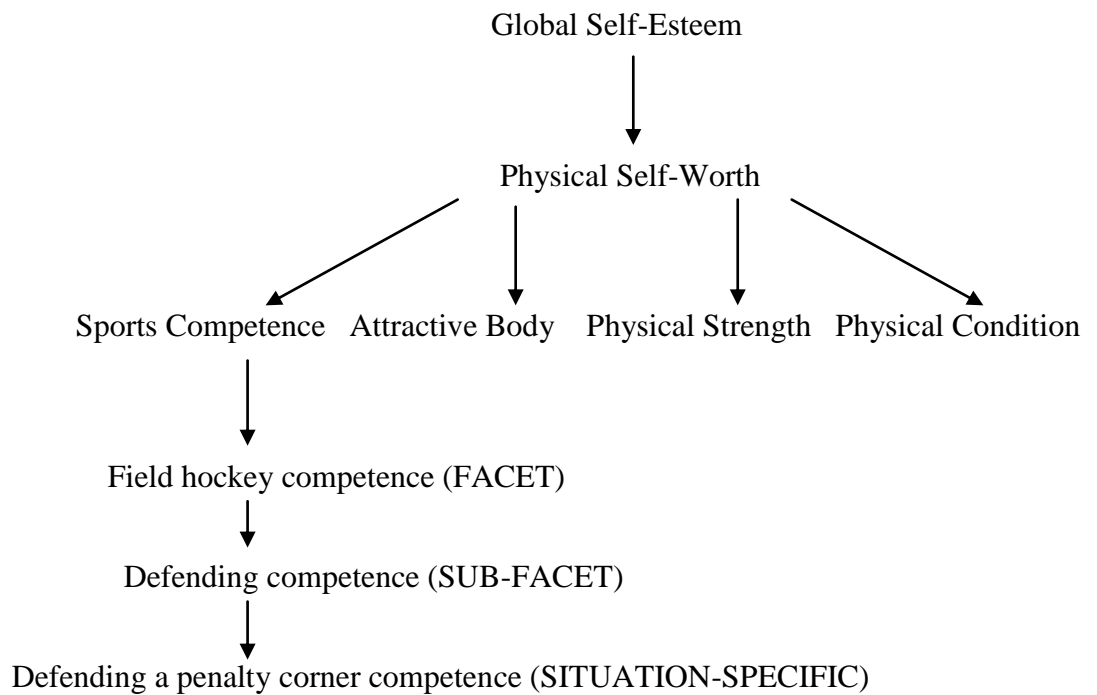


Figure 3.3: Levels of specificity of self-perceptions within the physical domain

3.3.3 Development and validation of the Children and Youth Physical Self-Perception Profile

Following on from Fox and Corbin's (1989) development of the PSPP using college students, considerable work has been done to examine the utility of the PSPP for a younger age group. The Children and Youth Physical Self-Perception Profile (CY-PSPP) version (Whitehead, 1995) assessed the same scales as the original PSPP but utilised clearer, age-appropriate terminology for the questions (Welk, Corbin, Dowell & Harri, 1997). All scales on the CY-PSPP have six items scored using a structured alternative format as in the original PSPP. The global self-worth subscale was

constructed and validated by Harter (1982) as part of a Perceived Competence Scale for Children. The physical self-worth subscale (Whitehead & Corbin, 1991) and the three subscales of body attractiveness, strength competence and physical condition represent adaptations by Whitehead (1995) from the original PSPP. The remaining subscale of sport/athletic competence from Harter's (1982) Perceived Competence Scale for Children was also used in place of the original Sport scale of the PSPP (Fox & Corbin, 1989).

By using confirmatory factor analyses, Eklund, Whitehead and Welk (1997) provided additional support for these modifications to the CY-PSPP in a large sample of children similar in age. One of the main concerns raised by researchers was that the structured alternative format of the original PSPP may be too confusing for children (Marsh & Gouvernet, 1989). An exploratory study by Welk, et al. (1997) tested the utility of the CY-PSPP model on a small sample of elementary school children to determine if they could understand this structured alternative format compared to a standard Likert Scale. Findings of the study showed that the factorial validity and the internal reliability of the CY-PSPP subscales were well supported, suggesting that using the four-point structured alternative format in CY-PSPP does provide valid and reliable information from children as young as 9 or 10 years of age regarding their physical self-perceptions.

Recent research findings examining the use of the CY-PSPP with elementary school children (8-12 years old) by Welk and Eklund (2005) support the factorial validity of the CY-PSPP model and show that each of the CY-PSPP domains significantly correlated with PA. These findings are consistent with previous research examining the utility of the CY-PSPP for use with college students (Fox, 1990); high school students (Welk et al., 1995) and middle school students (Eklund, et al., 1997). Despite Welk and Eklund (2005) conducting the first large scale confirmatory study to evaluate and validate the CY-PSPP for use with young children, the findings confirm that even young children hold independent perceptions of sport competence, physical condition, body attractiveness and strength. Welk and Eklund (2005) suggested that the CY-PSPP is a useful model to study developmental trends in physical self-perceptions across the wide age range of late childhood into adolescence.

3.3.4 Development of the self-concept and the physical self-concept during adolescence

Adolescence is generally considered to be a time of both change and consolidation due to physical changes that occur and intellectual growth, allowing a more complex and sophisticated self-concept (Coleman & Hendry, 1992). In relation to the development of the self during childhood and adolescence, Susan Harter pioneered the research on how specific areas of self-perceptions develop during childhood and adolescence and how these relate to more global perceptions of self-worth in younger children. Through her development of the Self-Perception Profile for Children (Harter, 1985), Harter found consistent evidence that the self-system becomes increasingly more complex with age, reflected in the number of subscales required to capture the self-perceptions of individuals in each age group. Similar findings were demonstrated by Marsh and colleagues in their research work on the development of self-perception instrumentation (e.g. Self-Description Questionnaire, Marsh, 1988).

Lintunen, Leskinen, Oinonen, Salinto and Rahkila (1995) longitudinally examined developmental changes in self-perceptions in early adolescents aged 11 years relating to perceived fitness, perceived appearance and self-esteem. Findings highlighted that for girls, self-perceptions become more stable during adolescence yet stability and change vary depending on the specific domain of self-perceptions. For girls, perceived fitness and self-esteem remained relatively stable; however perceived appearance demonstrated the lowest stability, decreasing over the four years. This research highlights that during early adolescence over the transition from primary school to secondary school self-perceptions may change in terms of their relative stability for each specific sub-domain. Therefore, an examination of the self-concept during adolescence would allow an insight into how each of the sub-domains relate to global levels of self-esteem and self-concept and how this relationship changes over time.

Similarly during the transition from primary school to secondary school, an individuals' frame of reference for their self-concept may change. Many theorists (e.g., Festinger, 1954; Tibault & Kelley, 1957; Rosenberg, 1965) assert that group membership influences the values and standards of performance used by individuals in their self-evaluations. In an educational context, Marsh (1987) proposed a frame of reference model known as the Big-Fish-Little-Pond Effect (BFLPE) and stated that individuals compare their abilities to those of their classmates and use this social comparison as a

basis for forming their own self-concept. The BFLPE occurs when equally able students have lower self-concepts when they compare themselves to more able students, and higher self-concepts when they compare themselves with less able students. Marsh (1987) stipulated that the BFLPE is most prevalent in primary school where children have no standard of comparison except their classmates and may not even know the average ability level of their classmates to compare with a broader frame of reference. In contrast in secondary school, classmates' academic ability is often known, particularly when classes are grouped according to academic ability.

The BFLPE is posited to be domain specific therefore within the physical domain it could be argued that individuals compare their physical ability those of their classmates and use this as a social comparison basis for their own physical self-concept. Research by Chanal, Marsh, Sarrazin and Bois (2005) demonstrated the BFLPE in a sport and exercise setting whereby gymnastic self-concept was positively predicted by an individual's own gymnastic skills but negatively predicted by the average level of skills of other participants in the same gymnastics class. To date there is limited research in this area however it could be suggested that the BFLPE could be particularly pertinent during the transition from primary school to secondary school in terms of a frame of reference for the physical self-concept. Towards the end of primary school, the BFLPE could be relatively high in relation to physical self-concept where individuals will compare themselves to a smaller number of others who are familiar to them in physical education (PE) classes. However in the first year of secondary school, the BFLPE may be dramatically reduced in relation to the physical self-concept where individuals will compare themselves to a larger group of unknown individuals in PE classes.

Throughout the literature there is notable agreement about the important contribution of the body and of the physical self-concept to global self-concept in adolescence and as stated by Fox (1997), "the physical self occupies a unique position in the self-system because the body, through its appearance, attributes and abilities provides the interface between the individual and the world" (p. 230). Furthermore, Brettschneider and Heim (1997) suggest that the rapidly changing body through the process of maturation provides an additional challenge to the formation of a coherent sense of self, particularly the development of the physical self-concept. Adolescents' perceptions of their physical self-concept are central to their PA behaviour as it is through the physical self that this behaviour occurs. Therefore, it would appear that an examination of changes in aspects

of the physical self-concept during adolescence, particularly during the school transition period, is fundamental in furthering understanding of the possible influence on PA behaviour of adolescent girls.

3.3.5 Theoretical links between the physical self and physical activity

With the development of adequate instrumentation to assess physical self-perceptions, researchers have been able to establish clearer links between the physical self and related behaviours, such as PA behaviour. Participation in PA involves an evaluation of some or all aspects of the physical self, therefore understanding the physical self could allow an insight into how it mediates PA behaviour (Fox, 1997). Notable achievement motivation theorists (Nicholls, 1984; Dweck, 1986; Ames, 1992) adopt a social cognitive approach to the study of motivational and behavioural patterns, suggesting that the primary focus of individuals in achievement settings is the demonstration of competence. It has been suggested that the self-concept is able to predict motivational tendencies as individuals tend to demonstrate behaviours in areas of competence to maintain or enhance self-perceptions (Hagger, Biddle & Wang, 2005). Within the achievement setting of PA and exercise, there have been numerous motivational theories (e.g., effectance motivation, White, 1959; self-efficacy theory, Bandura, 1977; competence motivation, Harter, 1978, 1982; self-enhancement hypothesis, Campbell, 1984 and self-presentation, Leary, 1992) that incorporate self-perceptions of ability as a key construct (Biddle, 1997). The concept of self-perceptions of ability is similar to the concept of perceived competence, which is often more commonly referred to in the majority of motivational theories.

One early theory of motivation is White's (1959) model of effectance motivation which aimed to fully consider the motivational aspect of competence. In his model, White (1959) considered competence to be the most singularly important determinant of motivation. In 1978, Susan Harter tested, refined and extended White's effectance motivation model by specifying domains of competence perceptions, addressing the implications of success and failure, outlining the function of rewards in the control of socialising agents and stating the relative influence of intrinsic and extrinsic motivation. The focus of Harter's (1978) paper, 'Effectance motivation reconsidered: Toward a developmental model', was aimed at understanding effectance motivation in a number of achievement domains in children and adolescents during the developmental period. Figure 3.4 highlights how effectance motivation is related to both positive and negative

outcomes regarding mastery attempts, reinforcement of mastery attempts and perceived competence during the developmental period.

The central concept of Harter's development of the effectance motivation model, also known as Harter's (1978, 1982) competence motivation theory, is that children and adolescents will strive to demonstrate mastery attempts in a particular achievement domain (e.g. academic, social and physical) in which they feel competent as shown in the centre of Figure 3.4. Mastery attempts can be defined as opportunities to develop a skill, through personal effort and hard work, through repeated practice attempts. During these mastery attempts, the degree of approval or disapproval through positive or negative reinforcement from significant others both directly and indirectly contributes to their perceived sense of competence and control. Successful performance and/or positive reinforcement from significant others (socialising agents) is likely to lead to high perceived competence and effectance motivation. Figure 3.4 also highlights that successful mastery attempts can also lead to intrinsic pleasure of the activity itself which further contributes to high levels of perceived competence and effectance motivation. This then results in an increase in attempts at mastery at various tasks, leading to further positive reinforcement, high perceived competence and enhanced effectance motivation. Therefore, the model is considered to be circular in nature with a continuous positive effect on perceived competence and effectance motivation through constant successful mastery attempts.

However, if there is a lack of reinforcement from significant others and a degree of disapproval of mastery attempts this directly and indirectly contributes to low perceived competence and effectance motivation, as shown in Figure 3.4. In addition, failure of mastery attempts can lead to anxiety in mastery situations which further contributes to a lack of perceived competence and a decrease in effectance motivation. This then results in fewer attempts at mastery of tasks and the possibility of eventual drop-out from that particular behaviour. Therefore highlighting the circular nature of the process until there are no more mastery attempts, primarily due to an accumulation of previous unsuccessful mastery attempts.

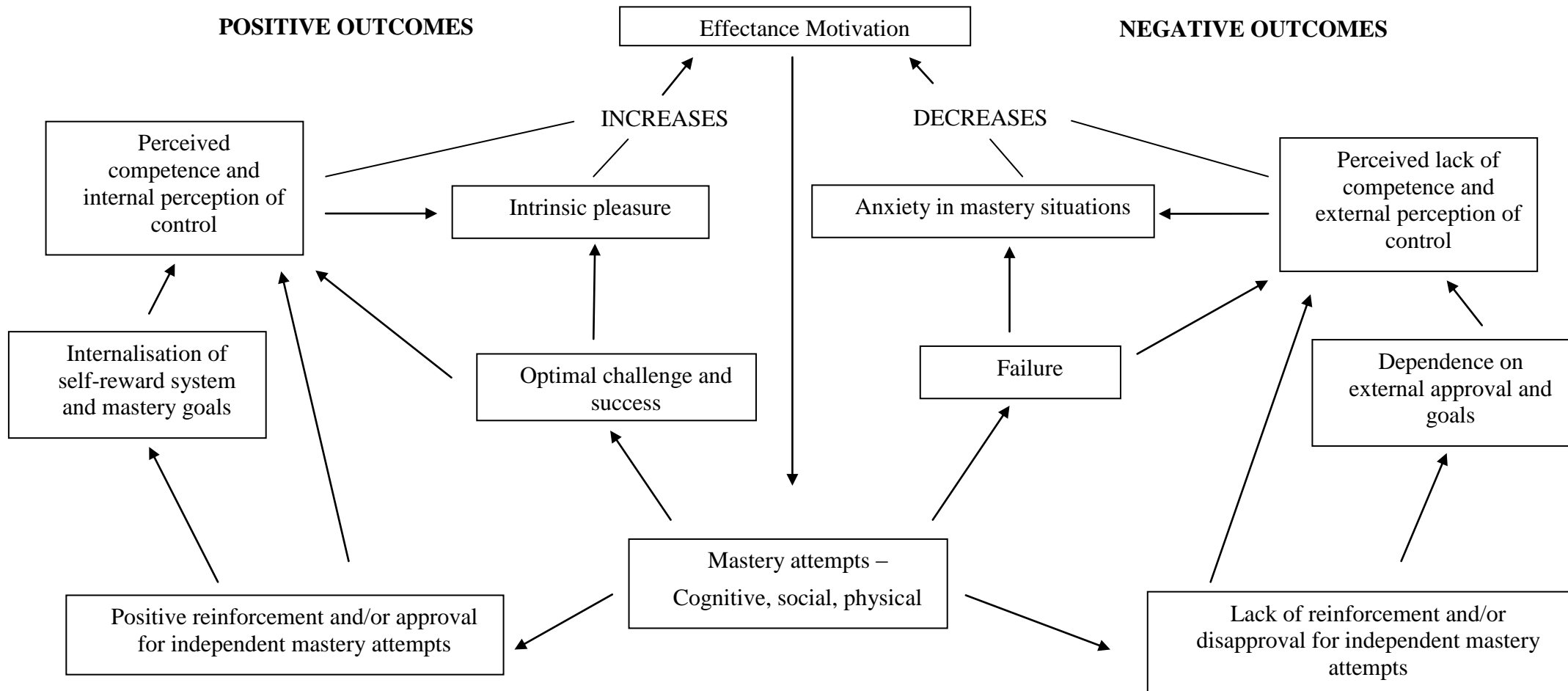


Figure 3.4: Developmental refinement and extension of White's model of effectance motivation (Harter, 1978)

In relation to the specific domain of the physical self, perceptions of competence can be facilitated by providing children and adolescents with positive mastery experiences. During childhood and adolescence, individuals will inevitably attempt to demonstrate mastery and ability of specific tasks within a PA setting, for example hitting a tennis ball. A proposed conceptualisation of Harter's (1978, 1982) competence motivation theory in relation to PA behaviour is highlighted in Figure 3.5. Successful mastery attempts at hitting a tennis ball and/or positive reinforcement from significant others, for example parents and peers, will lead the individual to perceive themselves as being more competent at hitting a tennis ball. This results in an overall increase in their levels of competence motivation, increasing the likelihood of further mastery attempts at hitting a tennis ball and playing tennis. Consequently, if these mastery attempts are again successful this can further enhance perceptions of competence and motivation through positive reinforcement from significant others, leading to further mastery attempts. Therefore, the process is circular in nature and will continue to have a positive impact on PA behaviour if there are continuous successful mastery attempts, as outlined in Figure 3.5.

However, if an individual is unsuccessful in their mastery attempts at hitting a tennis ball and/or receives negative reinforcement from significant others, this will result in the individual perceiving themselves as having a lack of competence at hitting a tennis ball. This will lead to low levels of competence motivation and will result in a subsequent decrease in mastery attempts to hit a tennis ball. The circular nature of Figure 3.5 suggests that if these negative outcomes persist over time, for example failure in mastery attempts and/or negative reinforcement from significant others, then there is a possibility of the individual eventually dropping out of playing tennis completely. In summary, for children and adolescents, perceptions of competence in the physical domain can be enhanced through the provision of mastery experiences. These experiences can have both a positive and negative influence on PA behaviour, depending on whether these mastery experiences are perceived as successful and this is reinforced by significant others.

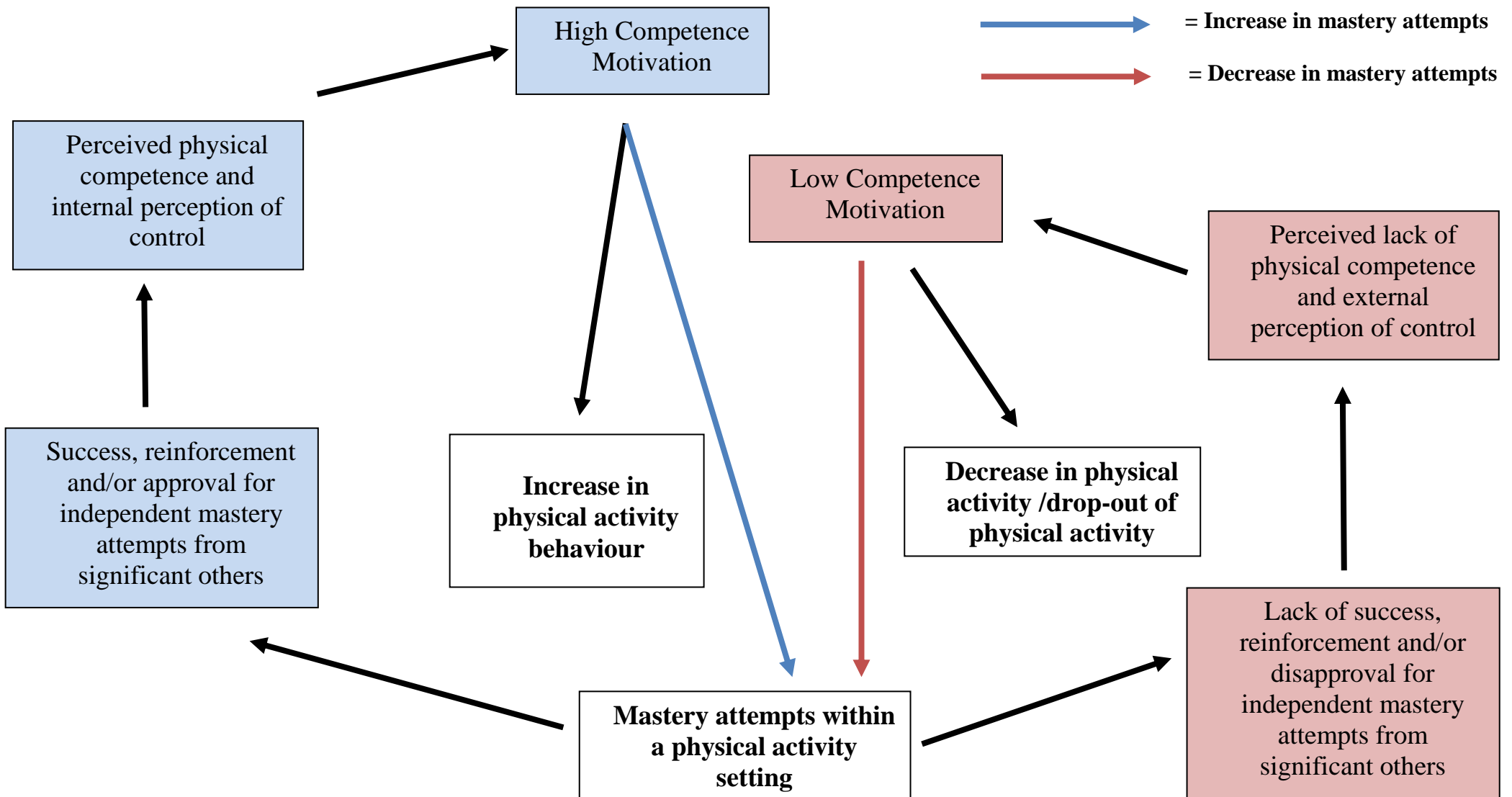


Figure 3.5: Proposed conceptualisation of Harter's (1978, 1982) competence motivation theory in relation to physical activity behaviour

3.3.6 Research examining the relationship between perceptions of competence and physical activity behaviour

Within the literature there has been a wealth of research examining the relationship between physical self-perceptions and PA behaviour in young people. Early research has primarily focused on examining the relationship between physical self-perceptions and several measures of fitness. A study by Biddle, et al. (1993) highlighted a moderate correlation between scores on a shuttle run as a measure of fitness and perceptions of sport competence, physical condition and physical self-worth. This relationship was later confirmed by Whitehead (1995) who found that perceptions of sport competence, physical condition and body attractiveness were all related to measures of muscular strength, anaerobic and aerobic capacities of adolescents. Similarly, research in youth sport (Biddle, et al., 1993; Hagger, et al., 1998; Weiss, Bredmeier & Shewchuck, 1986) has shown higher perceptions of internal control, intrinsic motivational orientations and levels of participation to be related to higher perceptions of competence. These findings do provide support for Harter's (1978, 1982) competence motivation theory (Figure 3.4) suggesting that internal control, intrinsic motivation and an increase in perceptions of competence are said to result in an overall increase in effectance motivation and subsequent attempts at mastery. However, the outcome measure of interest is PA behaviour in children and adolescents not sport or fitness-related variables. Therefore, the following literature will focus on how physical self-perceptions and PA behaviour are related.

One of the first studies to examine the relationship between physical self-perceptions and PA in children was carried out by Crocker, et al. (2000). Their study examined 220 boys and 246 girls aged 10-14 years, where PA was assessed using the Physical Activity Questionnaire for Children (PAQ-C; Crocker, et al., 1997) and physical self-perceptions were assessed using the PSPP (Fox & Corbin, 1989). Their findings demonstrated that perceptions of competence relating to the domains of sport, physical condition, body attractiveness and strength had a small to moderate positive correlation with PA in both boys and girls ($r = .26$ to $.47$), with perceptions of physical condition being the strongest correlate of PA in both boys and girls ($r = .47$). Similar findings were reported by Raudsepp, Liblik and Hannus (2002) in 11-14 year old Estonian school children. Perceived competence was assessed using the CY-PSPP (Whitehead, 1995) and PA was assessed using the 7-day PA recall questionnaire (Sallis, et al., 1993). Perceptions of body attractiveness, sport competence, physical condition and

strength competence were all found to be moderate positive correlates of PA ($r = .17$ to $.33$). Furthermore, multiple regression analysis indicated that for girls, perceptions of physical self-worth, body attractiveness and sport competence were the strongest predictors of PA, which accounted for between 18 and 21% of the variance in PA. In their discussion of their findings, Raudsepp, et al. (2002) suggested that the positive relationship between physical self-perceptions and PA provided further support for Harter's (1978, 1982) competence motivation theory, where higher levels of perceived competence appears to be related to an increase in PA behavior. However, and as noted by the authors themselves, from their findings it is difficult to determine causality to assess whether those individuals who are high active are more likely to have higher levels of perceived competence or whether individuals who have higher levels of perceived competence are more likely to be active. In addition, the authors do state that physical self-perceptions only predicted a small amount of the variation in the PA of adolescents in the study and additional predictors should also be considered.

The relationship between physical self-perceptions and PA in children and adolescents has also been examined using objective measures of PA behaviour by Raustorp, Stahle, Gudasic, Kinnunen and Mattsson (2005). PA was assessed over four consecutive days using pedometers in 48 Swedish school children aged 11-12 years and physical self-perceptions were assessed using the CY-PSPP (Whitehead, 1995). For both boys and girls, physical self-perceptions were all positively related to PA; however for girls only small correlations were found ($r = .13$ to $.19$) compared to boys ($r = .27$ to $.39$). In contrast to previous studies, findings revealed that physical condition, not sport competence, was the strongest correlate of PA in boys ($r = .39$) yet for girls, sport competence was the strongest correlate but demonstrating a weak relationship with PA ($r = .19$).

Until recently, research examining physical self-perceptions in relation to the PA behaviour of children and adolescents has focused on secondary school aged children (chronological age 11 years and above). Support for the relationship between physical self-perceptions and PA in young children aged 8-12 years has been provided by Welk and Eklund (2005). Physical self-perceptions were assessed by the CY-PSPP (Whitehead, 1995) and PA was determined using the PAQ-C (Crocker, et al., 1997). In support of previous findings in older children and adolescents, perceptions of sport competence were found to have the strongest relationship with PA in both boys ($r =$

.41) and girls ($r = .39$). This would suggest that for children as young as 8 years old, physical self-perceptions, in particular sport competence, are related to PA behaviour. Recent findings from the Physical Activity in Scottish School Children (PASS; Inchley, et al., 2008) have allowed further insight into the perceptions of competence of early adolescent girls and the association with PA behaviour in primary school. In their study, perceived competence was assessed using the Physical Ability subscale of the Self-Description Questionnaire (Marsh, 1988) and PA was assessed using the PAQ-C (Crocker, et al., 1997). Findings highlighted that of the girls with low levels of perceived competence only 44.8% of those were classified as high active compared to those with high levels of perceived competence where 78.8% were classified as high active. Although these cross-sectional findings do highlight that certain aspects of physical self-perceptions are positively associated with PA in adolescent girls in P7, the links to the hierarchical model of the physical self are lacking.

Overall these research findings provide an insight into how physical self-perceptions relate to PA behaviour in children and adolescents aged 8 through to 14 years old yet all of these studies are cross-sectional, only offering an insight into PA behaviour at a particular time point, therefore causality cannot be determined. Furthermore, all of the research findings differ as to which aspect of the physical self has the strongest relationship with PA. It could be that different physical self-perceptions are more important at different ages, as suggested by Harter (1985). Harter found consistent evidence that the self-system becomes increasingly more complex with age, reflected in the number of subscales required to capture the self-perceptions of individuals in each age group. Therefore, consideration of the relationship between the physical self and PA over time may provide a more detailed understanding of the link between PA behaviours and physical self-perceptions during adolescence.

Advancements in longitudinal research examining the physical self and PA have been made, with a particular focus on adolescent girls. In 2003, Crocker and colleagues examined covariance in the physical self-perceptions and PA behaviour of 631 14-16 year-old adolescent girls over a 12-month period. Their findings indicated that the change in PA levels over the 12-month period was associated with the change in physical self-perceptions, where 14.2% of the explained variance in PA change was accounted for by the change in physical self-perceptions. Furthermore, perceptions of physical condition were a significant individual predictor of the change in PA.

However, Crocker, et al. (2003) identified that 12 months may not be of sufficient duration to produce meaningful changes in all variables.

More recently, Crocker, Sabiston, Kowalski, McDonough and Kowalski (2006) reported findings from their longitudinal examination of the relationship between physical self-concept and health-related behaviours and emotions in adolescent girls over a three-year period. In year one, 705 adolescents girls aged 14-15 years participated, which included a selection of the girls from the cohort in Crocker, et al's (2003) study. In year three, data for 501 adolescent girls aged 16-17 years were gathered. Findings indicated that perceptions of physical condition and sport competence were both cross-sectional and longitudinal correlates of PA, where physical condition was a significant individual predictor of the variance in PA over the three years, similar to the findings of Crocker, et al. (2003). The co-variation between PA change and physical self-perceptions supports the idea that the physical self plays a key role in the adoption and maintenance of PA (Sonstroem, 1997). However, it is important to note that in both studies by Crocker and colleagues (Crocker, et al., 2003; Crocker, et al., 2006), the variance in PA accounted for by physical self-perceptions was relatively small and other factors related to the drop in PA need to be considered longitudinally. In addition, the discussion of possible theoretical links with the research findings were limited with the authors highlighting that future research should consider using a combination of qualitative and quantitative research methodologies to advance theoretical understanding of the relationship between the physical self and PA.

Recently, the PASS survey (Inchley, et al., 2008) have published findings that examined PA behaviour change from primary 7 (P7) to secondary 4 (S4) in relation to aspects of perceptions of competence where all measures were assessed annually. During this time there was an overall decline in perceived competence, assessed using the Physical Ability subscale of the Self-Description Questionnaire (Marsh, 1988), with the authors reporting a significant increase in the number of girls reporting low perceived competence across the primary-secondary school transition. These findings highlight an overall trend of a decrease in perceptions of competence in early adolescence, particularly during the school transition period which could be related to the marked decrease in PA also observed at this time. However no known research has focused specifically on assessing perceptions of competence using the CY-PSPP

(Whitehead, 1995) and examining the relationship with PA behaviour during early adolescence during the school transition.

3.4 Maturation and the physical self

Maturation is a critical transitional period for early adolescent girls, bringing with it a number of changes in their physical appearance, body shape and body size, as outlined earlier. As a result of these physical changes, maturation could represent an important time for how girls view their body and its salience in defining the physical self. Early-maturing girls are more overweight both preceding and following puberty than later-maturing girls (Davison, Susman & Birch, 2003) and have a greater percentage of body fat (Thompson & Chad, 2000). As a result it is possible that early-maturing girls may be more vulnerable to negative psychological outcomes than later maturing girls. These outcomes could include lower self-esteem, perceived competence and confidence, particularly in situations involving the display of their physical appearance to others, for example in PA settings. Indeed, several studies have shown that early-maturing girls have a less positive body-image than their on time and late-maturing peers (Alsaker, 1992; Williams & Currie, 2000).

3.4.1 Research examining the physical self and maturation

Research examining the physical self and maturation has addressed the relationship between aspects of the physical self and body image with the physical characteristics of maturation, for example body mass, in addition to actual measures of maturation. In 2006, O'Dea examined changes in self-concept and body mass longitudinally over three years in 80 adolescent girls aged 12.8 years. Perceptions of physical appearance and athletic competence were assessed using Harter's (1988) Self Perception Profile for Adolescents. Findings highlighted that for those girls who were classified as having a high BMI at baseline, their perceptions of physical appearance significantly decreased over three years compared to girls with a low BMI. In addition, for girls with a high BMI, perceptions of athletic competence decreased over the three years compared to girls with a low BMI where perceptions of athletic competence remained relatively stable. These findings suggest that certain aspects of the physical self are negatively associated with the physical characteristics that accompany maturation. However, as outlined previously, BMI is not necessarily a good indicator of fatness among children and adolescents, therefore the findings should be interpreted with necessary caution.

Focusing on the research which has addressed actual measures of maturation, O’Dea and Abraham (1999) examined the association between self-concept, body mass and pubertal development in 462 adolescent boys and girls aged 13 years. Pubertal development for girls was a self-report measure according to the onset of menstruation, categorising the girls as either pre- or post-menarchal and self-concept was determined using the Self Perception Profile for Adolescents (Harter, 1988). In relation to the self-concept subscale of physical appearance, post-menarchal girls had lower scores compared to pre-menarchal girls. Similarly, post-menarchal girls’ scores were lower for the subscale of athletic competence compared to pre-menarchal girls. In addition, these aspects of the self-concept were negatively associated with body mass. These findings suggest that maturation and increased body mass is negatively associated with the self-perceptions of physical appearance and athletic competence. However, it is important to note that this study does have methodological limitations. The onset of menarche is considered as one of the later events in the overall sequence of changes associated with sexual maturation (Malina, et al., 2004), therefore reliance on a single-item measure used as an overall measure of maturational status is relatively limited. In addition, this study is cross-sectional in nature and therefore causality cannot be determined between the variables of body mass and self-perceptions of appearance and athletic competence.

An additional limitation of research in this area is that there are only a few studies that have examined the relationship between maturational changes during adolescence and the hierarchical model of the physical self using specific physical self-esteem instruments. Research examining the relationship between the physical characteristics of maturation and physical self-perceptions has consistently shown the CY-PSPP (Whitehead, 1995) subscale of body attractiveness to be negatively associated with a number of physical characteristics associated with maturation. Cross-sectional findings by Welk and Eklund (2005) highlighted that for early adolescent girls (8-12 years old), perceptions of sport competence, physical condition, body attractiveness and strength competence were all negatively related to percentage body fat, where body attractiveness emerged as a significant negative correlate ($r = -.44$). In relation to BMI, only perceptions of body attractiveness ($r = -.41$) and physical condition ($r = -.23$) emerged as significant negative correlates. In contrast to these findings, Raustorp, et al. (2005) found that for 48 adolescent girls aged 11-12 years, perceptions of sport competence, physical condition, body attractiveness and strength competence were all

negatively related to BMI, with perceptions of sport competence ($r = -.40$) and body attractiveness ($r = -.40$) being the strongest negative correlates.

However, findings from longitudinal research examining the relationship between physical self-perceptions and BMI suggest that BMI has a limited influence in predicting change in physical self-perceptions during adolescence. In their study examining covariance in the physical self-perceptions and BMI of 14-16 year-old adolescent girls over a 12-month period, Crocker, et al. (2003) found that although BMI increased significantly over the 12 months, BMI did not co-vary with the change in physical self-perceptions. Similarly, Crocker, et al. (2006) also found that increases in BMI were not related to change in perceptions of body appearance in their examination of the relationship between the physical self-concept and health-related behaviours and emotions in adolescent girls. These findings suggest that physical characteristics, such as height and body weight, and perceptions of these physical characteristics are relatively independent of each other during adolescence.

To date, the majority of the limited research examining direct measures of maturation and the physical self is relatively inconsistent in the methodology and contradictory in the findings. Monsma, Malina and Feltz (2006) considered the relationship between maturation and appearance-related self-perceptions in 113 adolescent female figure skaters aged between 12 and 22 years. The Physical Self-Description Questionnaire (PSDQ; Marsh, et al., 1994) was used to measure self-concept and maturation was assessed using a single self-report question relating to the onset of menstruation; therefore classifying the girls as either pre- or post- menarchal. Findings showed that menarchal status was a stronger correlate of self-perceptions than chronological age in adolescent female figure skaters, with post-menarchal girls reporting more negative perceptions of self-esteem, appearance and sport competence. These findings would suggest that maturation is influential on aspects of the physical self in adolescent female figure skaters. However a limitation of this study is that the findings relate specifically to the population of female figure skaters where perceptions of self-esteem, appearance and sport competence may be more salient due to the demands of their sport. Therefore, it is difficult to generalise these findings to the population sample of interest, adolescent girls. Furthermore, the reliance on a single self-report question to assess maturation is a limitation of the study that has also been identified in previous research.

Identifying this research limitation, recently Davison, Werder, Trost, Baker and Birch (2007) examined the relationship between maturational timing and several measures of psychological well-being including: perceived athletic competence, global self-worth and body esteem. Participants included were 178 girls who were assessed at age 11 years, of whom 168 were reassessed at age 13 years. Addressing the methodological limitations of previous research, maturational status was assessed using a combination of Tanner staging, PDS scores obtained from the girls' mothers and blood oestrodial samples. From these, the girls were classified as having either earlier or later pubertal timing at age 11 years relative to the overall sample, thus gaining a normative measure of maturational status based on objective and subjective measures of maturation. In addition, the Maturity-Related Fears Scale (Sinton, Davison & Birch, 2005) was used to assess the girls' awareness of weight- and body-shape-related discontent due to physical changes. Cross sectional findings at age 11 years showed a negative association between all measures of maturation and body esteem, which was not evident for perceived athletic competence. More advanced maturational status at age 11 years did not predict lower levels of body esteem and perceived athletic competence at age 13 years yet was predictive of an increase in weight-related maturity fears, suggesting that earlier maturing girls do have weight-related concerns due to the physical changes associated with maturation. Furthermore, it is possible that such weight-related concerns could impact on their participation in activities where their bodies are on display, for example swimming and gymnastics. The authors do suggest that the absence of an effect of advanced maturational status on perceived athletic competence may be due to the relatively small change seen in perceived athletic competence over the two years. Similarly, controlling for percentage body fat in the study may have limited the possibility of an influence of maturational status on body esteem. Overall the findings would suggest that early maturation had a limited influence on perceptions of athletic competence and body esteem, yet is related to weight-related maturity fears.

Most recently, Altintas and Asci (2008) examined physical self-esteem in 803 adolescent boys and girls aged 13.1 years in relation to self-assessed PA and pubertal status. Physical self-esteem was assessed using the CY-PSPP (Whitehead, 1995) and pubertal status was measured using a demographic questionnaire consisting of generic and specific gender-related puberty characteristics, resulting in participants being classified as either pre- or post-pubertal. Contrary to the findings of Monsma, et al.

(2006), their results found no significant differences in all four sub-domains of the physical self with respect to the pubertal status of adolescent girls. From their findings, Altintas and Asci (2008) suggest that attaining maturational milestones and changes in biological and physical characteristics is not critical for the physical self-esteem of Turkish adolescents. Although Altintas and Asci (2008) did assess physical self-perceptions in line with the hierarchical model of the physical self, there are identifiable methodological limitations in the study. The measure used to assess maturation was not a previously validated self-report questionnaire of maturational status. Furthermore, participants were only categorised into two groups of pre-pubertal or post-pubertal which may have limited the ability to identify a possible effect of maturation on physical self-perceptions.

3.5 Summary of the literature

Physical inactivity is now a major public health issue (Department of Health, 2004) and during adolescence PA levels are shown to drastically decline, which has been shown to be more marked in adolescent girls. Recent research has shown that this decrease in PA is most apparent during the transition from primary school to secondary school, therefore suggesting that a closer examination of this transitional period could be of importance in understanding the PA behaviour of adolescent girls.

From the review of variables associated with PA in adolescent girls, research to date indicates that there are numerous possible reasons as to why girls are inactive including a lack of social support and peer involvement in PA, increased body mass and body fat and psychological variables. These psychological variables include a perceived lack of competence, lower self-esteem and an overall lack of enjoyment of PA. However, recently research has turned its attention towards examining the interaction of variables rather than considering their isolated influence on PA behaviour. Therefore, an examination of both the direct and indirect influence of the psychological and biological variables could provide further understanding of PA behaviour in adolescent girls.

For adolescent girls biological maturation is a process that is categorised by changes in both somatic characteristics (e.g. an increase in percentage body fat) and sexual characteristics (e.g. breast development), all of which could directly influence PA behaviour. Research examining the influence of maturation on PA is relatively limited

offering only cross-sectional findings which are often contradictory. Consequently, Wickel and Eisenmann (2007) have identified an apparent need for longitudinal research in this area.

In addition, participation in PA involves some or all aspects of the physical self and the research available suggest that physical self-perceptions play an important role in influencing the PA behaviour of adolescent girls. However to date, no known research has examined the relationship between PA and physical self-perceptions in early adolescent girls, particularly during the transition from primary school to secondary school. Furthermore, research suggests that physical self-perceptions only account for a small amount of the change in PA during adolescence, therefore consideration of the possible influence of other variables could be of more value. The physical changes that accompany maturation may play an important role in the formation of the physical self, especially for early maturing girls where natural increases in body fat, breast development, wider hips and shorter legs are generally opposed to cultural ideals for the female body. Therefore, as girls mature they may have less positive physical self-perceptions, particularly perceptions of body attractiveness. Cross-sectional findings show that physical self-perceptions are negatively related to certain physical characteristics associated with maturation, for example body fat. Yet from the research available examining the physical self and direct measures of maturation, it is still unclear how these variables are related due to contradictory findings from only a few studies. Furthermore, no known research has focused specifically on the hierarchical model of the physical self and examined how perceptions of sport competence, physical condition, body attractiveness and strength competence are influenced by maturation.

Overall, from the literature reviewed it is apparent that there is a need for research examining both the direct and indirect influence of maturation and physical self-perceptions on PA behaviour in early adolescent girls, particularly during the transition from primary school to secondary school. In addition, Crocker, et al. (2006) suggested there is a need to advance our theoretical understanding of the relationship between the physical self and PA. Therefore, focusing on perceptions of competence, as conceptualised in the physical self perception hierarchy (Fox & Corbin, 1989) and Harter's (1978, 1982) competence motivation theory, may further our theoretical

understanding of the direct and indirect influence of maturation and physical self-perceptions on PA behaviour in adolescent girls.

3.5.1 Overall research aims

As identified in the research literature, the influence of maturation on PA may be both direct (i.e. maturational changes lead to a decrease in PA), and indirect (i.e., through the influence of maturation and physical characteristics on physical self-perceptions). Figure 3.6 represents the overall hypotheses as a result of the literature reviewed and indicates that maturation may be directly related to PA, physical characteristics and physical self-perceptions. In addition, maturation may be indirectly related to PA through physical characteristics and physical self-perceptions. Physical characteristics may be related to physical self-perceptions and physical self-perceptions may be related to PA.

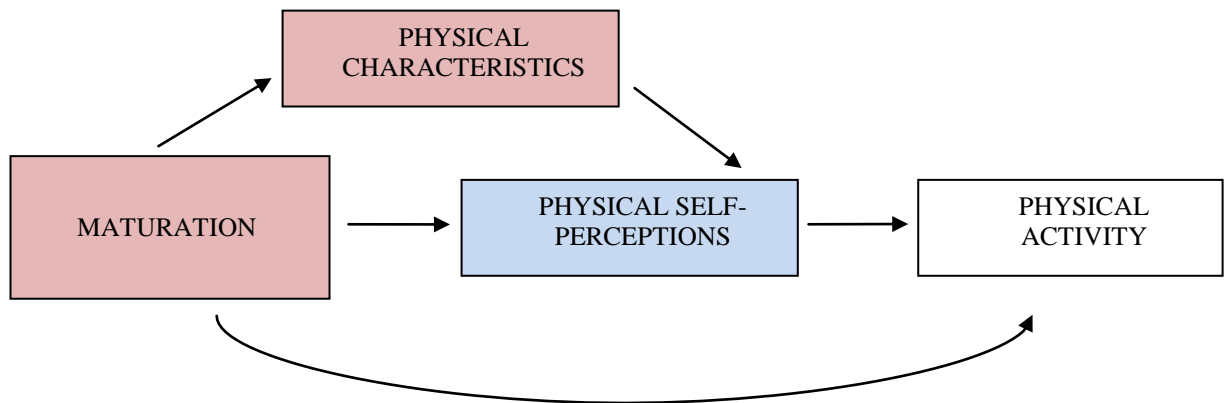


Figure 3.6: Visual representation of the proposed direct and indirect influence of maturation, the physical characteristics associated with maturation and physical self-perceptions on physical activity

CHAPTER 4: STUDY 1 - A LONGITUDINAL EXAMINATION OF THE INFLUENCE OF MATURATION ON PHYSICAL SELF-PERCEPTIONS AND THE RELATIONSHIP WITH PHYSICAL ACTIVITY IN EARLY ADOLESCENT GIRLS

Two articles have been published from the findings of this study:

Niven, A. G., Fawkner, S. G., Knowles, A. M. & Stephenson, C. (2007). Maturation differences in physical self-perceptions and the relationship with physical activity in early adolescent girls. *Pediatric Exercise Science*, 19, 472-480.

Niven & Fawkner conceived the study and supervised all aspects; Knowles & Stephenson developed the protocol and collected the data; Niven and Knowles analysed the data and Niven drafted the article for submission.

Knowles, A. M., Niven, A. G., Fawkner, S. G., & Henretty, J. M. (2008). A longitudinal examination of the influence of maturation on physical self-perceptions and the relationship with physical activity in early adolescent girls. *Journal of Adolescence*, 32(3), 555-566.

Niven & Fawkner conceived the study and supervised all aspects; Knowles & Henretty developed the protocol and collected the data; Knowles analysed the data and drafted the article for submission.

4.1 Introduction

The decline in physical activity (PA) during adolescence is more marked in girls than boys and it has been noted that this decrease coincides with a change in schools (Boreham & Riddoch, 2001; Biddle, et al., 2004). Recent research by Inchley, et al. (2008) has highlighted that the decline in PA is most apparent during the transition from primary school to secondary school, particularly for adolescent girls. Participation in PA can involve an evaluation of some or all aspects of the physical self and physical self-perceptions have been linked to a number of motivational theories that incorporate self-perceptions of ability as a key construct that influences motivation and behaviour (Biddle, 1997). In particular, Harter's (1978, 1982) competence motivation theory suggests that individuals will be motivated to demonstrate mastery attempts in a particular achievement domain (e.g., academic, social and physical) in which they feel competent. Physical self-perceptions play an important role in PA behaviour with a wealth of research highlighting that physical self-perceptions are positively related to PA in adolescent girls, yet research considering this relationship in early adolescence is sparse. Support for the positive relationship between physical self-perceptions and PA

in young children aged 8-12 years has been provided by Welk and Eklund (2005), where perceptions of sport competence were found to have the strongest relationship with PA. Recent advancements in the understanding of the relationship between the physical self and health-related variables in adolescent girls over time have been made by Crocker and colleagues (Crocker, et al., 2003; Crocker, et al., 2006). Longitudinal analysis identified that a small proportion of the decrease in PA over three years in adolescent girls aged 14-17 years was accounted for by the change in physical self-perceptions (Crocker, et al., 2006). More specifically, perceptions of sport competence and physical condition were both cross-sectional and longitudinal predictors of changes in PA, with physical condition being a significant individual predictor of changes in PA. These findings suggest that physical self-perceptions are important predictors of PA behaviour during the period of adolescence and developing positive physical self-perceptions could help maintain PA behaviour in adolescents. However, from their own research findings, Crocker, et al. (2006) suggested that a focus on early adolescent girls may be more appropriate in understanding PA behaviour because physical self-perceptions became relatively stable during mid to late adolescence.

It can also be noted that the decrease in PA during early adolescence occurs at a similar time to the onset of maturation for adolescent girls, which may suggest that maturation may be influential on this decrease in PA. Early research by Armstrong, et al. (1990) examining the relationship between PA and maturation suggested that maturation had no influence on sustained levels of PA in both boys and girls aged 11-16 years. Contradictory to these findings, Bradley, et al. (2000) suggested that early maturation was related to lower levels of PA in girls aged 11-14 years. More recently, Baker, et al. (2007) found that early-maturing girls, relative to their peers at age 11, had significantly lower PA at age 13 years compared to their later-maturing peers. Therefore to date, the research examining the relationship between PA and maturation, particularly in early adolescent girls of primary school age, is limited and inconclusive due to contradictions in the available findings.

It is possible that the relationship between maturation and PA may not be direct and could be related to the influence maturation may have on physical self-perceptions. Typical physical changes associated with maturation for adolescent girls include an increase in percentage body fat and breast development which could result in some girls opting out of certain activities due to competence and appearance related

concerns. Research consistently shows that physical characteristics related to maturation, for example increased percentage body fat, are negatively related to physical self-perceptions in adolescent girls (Raustorp, et al., 2005; Welk & Eklund, 2005). However, research examining the relationship between physical self-perceptions and maturation itself is limited. Recently Monsma, et al. (2006) considered the relationship between maturation and appearance-related self-perceptions in 113 adolescent female figure skaters aged between 12 and 22 years. Although the findings showed that menarchal status was a stronger correlate of self-perceptions than chronological age in adolescent female figure skaters, this relates specifically to the population of female figure skaters where perceptions of self-esteem, appearance and sport competence may be more salient due to the demands of their sport. In relation to the non-athletic population, there is only one known study to date focusing on the relationship between maturation and physical self-perceptions relating to sport competence, physical condition, body attractiveness and strength competence in adolescent girls 13 years old (Altinas & Asci, 2008). Their findings suggested there were no significant differences in any of the four sub-domains of physical self-perceptions in relation to maturational status. To date, there is an apparent gap in the research knowledge of the relationship between maturation and physical self-perceptions, particularly in early adolescent girls.

Therefore the overall aim of study one was to conduct a longitudinal examination of the relationship between maturation, physical self-perceptions and PA in adolescent girls over 12 months during the transition from primary to secondary school. Firstly, a cross-sectional exploration of the relationship between maturation, the physical characteristics associated with maturation, physical self-perceptions and PA at both Phase 1 (primary school) and Phase 2 (secondary school) was undertaken. On the basis of the literature reviewed, four cross-sectional hypotheses were identified:

- i. Physical self-perceptions will be positively related to PA.
- ii. Body mass, waist circumference and sum of skinfolds will be positively related to maturation.
- iii. Maturation, body mass, waist circumference and sum of skinfolds will be negatively related to physical activity.
- iv. Maturation, body mass, waist circumference and sum of skinfolds will be negatively related to physical self-perceptions.

Secondly, an examination of changes in PA, physical characteristics and physical self-perceptions in adolescent girls over 12 months during the transition from primary school to secondary school and identification of how these changes are influenced by maturational status will be undertaken. On the basis of the literature reviewed, five further hypotheses were identified:

- v. Physical activity and physical self-perceptions will decrease over the 12 months.
- vi. More mature girls will have increased body mass, waist circumference and sum of skinfolds.
- vii. Maturation, body mass, waist circumference and sum of skinfolds will influence the decrease in physical activity.
- viii. Decrease in physical self-perceptions will influence the decrease in physical activity.
- ix. Maturation, body mass, waist circumference and sum of skinfolds will influence the decrease in physical self-perceptions.

4.2 Methods

4.2.1 Participants

Seventeen primary schools and six secondary schools in Edinburgh were invited to take part in the study. Baseline data (Phase 1) was collected from 208 adolescent girls (mean age = 11.83 ± 0.39) from 17 Edinburgh primary schools, representing a range of socio-economic backgrounds. Twelve months later (Phase 2) 156 of the girls participated in the data collection (mean age = 12.79 ± 0.31) which took place in six Edinburgh secondary schools, therefore tracking the girls from primary school into secondary school. The primary reason for non-participation at Phase 2 was not attending a secondary school participating in the study ($n = 33$). There were no significant differences across any of the variables in Phase 1 between those who participated in Phase 2 and those who did not. All girls and parents/guardians gave written informed consent and the School of Life Sciences Ethics Committee at Heriot-Watt University approved the project. Exact chronological age was calculated from the date of birth to the day of assessment.

4.2.2 Measures

The Girls' Health Questionnaire Booklet (Appendix A) was developed to collect demographic information and data on PA, maturation and physical self-perceptions, in addition to other variables not reported in this study.

Physical activity. PA was assessed using the self-report Physical Activity Questionnaire for Children (PAQ-C; Crocker, et al., 1997; Section 2, Questions 3-11). The PAQ-C is a 7-day recall instrument developed to assess general levels of PA during the school year, based on nine items. These nine items relate to i) frequency of participation in specific spare time activities¹; ii) activity level in Physical Education (PE); iii) activity level at break-time; iv) activity level at lunchtime; v) frequency of participation in PA right after school; vi) frequency of participation in PA in the evening; vii) frequency of participation in PA at the weekend; viii) activity level during free time; and ix) level of activity on each day of the previous week. A summary PA score is derived from the nine items, each scored on a five-point Likert scale where a score of 1 indicates little or no PA and a score of 5 indicates very high levels of PA. The PAQ-C has previously demonstrated acceptable validity and reliability in an early adolescent population (Welk & Eklund, 2005) and the internal reliability for the PAQ-C in this study at Phase 1 was $\alpha = 0.79$ and 0.85 at Phase 2.

Maturation. Maturation was self-assessed using the self-report Pubertal Development Scale (PDS; Petersen, et al., 1988; Section 3). The PDS is a 5-item scale that assesses five physical changes in pubertal development: growth in height, growth of body hair, skin changes, breast development and menstrual status. Pubertal development on each item is rated on a four-point scale. An overall pubertal score was calculated as a mean of the five items and was treated as a continuous variable. It was also used to classify the girls into maturation stages, therefore used as a grouping variable. Girls with a mean score of less than 2 suggested the girls were showing no or only early signs of maturation (early maturation stage), a mean score between 2 and 3 suggested the girls were mid way through the maturation process (mid maturation stage) and a mean score of 3 or more suggested the girls were in the late stages of, or had completed the maturation process (late maturation stage). Petersen, et al. (1988)

¹ Activities included cycling, football, rollerblading/skateboarding, walking for exercise, jogging/running, swimming, gymnastics, aerobics, active games, dance, rugby, basketball/netball/volleyball, tennis/badminton/squash, hockey, golf, karate/judo/taekwondo, other

examined the reliability of the PDS in terms of internal consistency and the alpha coefficients of the PDS ranged from 0.68 to 0.83 with a median of 0.77. In addition, validity of the PDS was assessed by comparing interviewer ratings of pubertal status with the child's self-report pubertal status and correlations ranged from .41 to .79 with a median correlation of .70. The internal reliability for the PDS in this study at Phase 1 was $\alpha = 0.72$ and 0.61 at Phase 2.

Physical Self-perceptions. Physical self perceptions were assessed using the Children and Youth's Physical Self-Perception Profile (CY-PSPP; Whitehead, 1995; Section 6), which is designed to assess self-perceptions within sub domains of the physical self. These are sport competence, physical condition, body attractiveness and muscular strength and development and a fifth subscale measures overall physical self-worth. The sport competence subscale is drawn from Harter's (1982) Self Perception Profile as this instrument had previously been validated with a similar age group (Whitehead, 1995). Each scale contains six items on a structured alternative scale, offering two opposing statements. The participant is first asked which of two statements best describes them and then decides whether it is really true or somewhat true of them. The item score can range from 1 (low) to 4 (high). The physical self-perception subscales have demonstrated acceptable internal reliability with young children and adolescents (Crocker, et al., 2000; Welk & Eklund, 2005). The internal reliability estimates of the physical self-perception subscales in this study at Phase 1 were acceptable: sport competence ($\alpha = 0.76$), physical condition ($\alpha = 0.79$), body attractiveness ($\alpha = 0.86$), strength ($\alpha = 0.81$) and physical self-worth ($\alpha = 0.82$). Similarly at Phase 2 the internal reliability estimates were: sport competence ($\alpha = 0.82$), physical condition ($\alpha = 0.81$), body attractiveness ($\alpha = 0.87$), strength competence ($\alpha = 0.82$) and physical self-worth ($\alpha = 0.85$).

Physical Data. Body mass was assessed using a Seca precision dial scale (Seca, Vogel and Halke, Hamburg, Germany). Waist circumference was assessed using a steel anthropometric tape (Rosscraft Innovations Inc, UK). Skinfolts were assessed using Harpenden skinfold calipers (ASSIST creative resources LTD) at five sites on the right side of the body; the bicep, tricep, subscapular, iliac crest and medial calf. Assessments were carried out according to the procedures identified by the International Society for the Advancement of Kinanthropometry (ISAK) and all intra-tester measurements reported had a Technical Error of Measurement (TEM) of less than 5%.

4.2.3 Procedure

Pilot study

The Girls' Health Questionnaire was piloted on a small sample of adolescent girls in P7 at a school not involved in the overall study. The use of a pilot study served several purposes. Firstly the researcher was able to determine how long it took the girls to complete the questionnaire and to establish if the girls found it difficult to understand any sections of the questionnaire. In addition, the piloting of the questionnaire allowed the researcher to assess whether her explanations of the different sections of the questionnaire were adequate and sufficient to aid understanding and to identify if the questionnaire should be broken up into sections. A feedback questionnaire was also given to all pilot study participants. As a result of the pilot study and the feedback obtained, the questionnaire was split into three parts, thus allowing a short comfort break for the girls between each section. Minor modifications to the format of the questionnaire were made to make it easier to complete. In addition, prior to completion of each section of the questionnaire, certain terms that were not fully understood in the pilot study were explained to the participants. For example, in the CY-PSPP (Whitehead, 1995; Section 6), the term 'vigorous' was not fully understood therefore the researchers ensured this was fully explained prior to completion. Finally, certain sporting activities in the PAQ-C (Crocker, et al., 1997; Section 2, Question 3) were not common activities participated in by British children, for example ice-hockey, and were therefore substituted with activities more regularly participated in, for example rugby.

Main study

At both phases of data collection, the researchers visited each of the schools and met with appropriate staff members a month prior to the data collection. This was to ensure any questions the staff had were answered fully and to confirm the logistics of collecting the data in each school. Subsequently, a confirmation e-mail was sent to each school, including a timetable detailing times and venues for all the participants for the scheduled day of data collection

Typically the data were collected over several days in each school. All girls completed the questionnaire in a group classroom setting, prior to the physical measurements. Administering the questionnaire first gave the researchers the opportunity to develop rapport with the girls so that the girls would feel more comfortable during the physical

assessment. Occasionally, it was necessary to split the girls into smaller groups throughout the day to ensure minimal disruption to their timetabled lessons. A full explanation for each section was provided before the girls started the questionnaire and examples were given when deemed necessary. The CY-PSPP has previously been criticised as being confusing for children (Marsh & Gouvernet, 1989), therefore considerable time was taken to fully explain the questionnaire and examples were provided. The questionnaire was split into three sections and there was a small comfort break in between each section. Throughout administration of the questionnaire the researchers encouraged and praised the girls in order to maintain their motivation. On average the procedure took 1 hour and 15 minutes.

Following the questionnaire, the girls were allocated paired timetabled slots where they came to a private room to complete the physical measurements. The measurements took approximately 10-15 minutes per pair and during the physical measurements two researchers were always present with the girls

4.2.4 Data analysis

All data were double inputted into SPSS version 12 (SPSS Inc., Chicago, IL, USA Version 12). The data were subsequently screened and checked for inconsistencies between the two spreadsheets. Participants for whom there were any missing variables were excluded, reducing the sample for analysis at Phase 1 to 201 girls and to 150 at Phase 2. Therefore comparisons between Phase 1 and Phase 2 data were made on 150 girls. Prior to further analyses, the data were tested for the assumptions of parametric tests. Although all of the variables did not meet these assumptions at either Phase 1 or Phase 2, subsequent square root log transformation of the data (Tabachnick & Fidell, 2001) indicated no significant difference in the findings when using the log-transformed data or the original data. Therefore, to ease interpretation, parametric tests were used for subsequent data analysis on the original data (Tabachnick & Fidell, 2001).

Cross-sectional data analysis

Pearson correlation analyses were used to examine the relationships between PA, physical characteristics, maturation and physical self-perceptions at Phases 1 and 2. Due to the relatively large sample size, only significant associations with r values

greater than or equal to 0.2 were deemed meaningful and are reported in this study. This is consistent with previous research in this area (Biddle, Whitehead, et al., 2005).

A one-way ANOVA was used to compare the PA levels of the girls at early, mid or late maturation stages at Phases 1 and 2. A MANOVA test was used to compare the three maturation stages on each of the physical self-perception subscales at Phases 1 and 2. Planned follow-up one-way ANOVAs with appropriate post-hoc tests were undertaken to determine where any differences occurred.

Longitudinal data analysis

Paired sample t-tests were used to examine the changes in PA, physical characteristics and physical self-perceptions over the 12 month period. Cohen's *d* effect sizes (Cohen, 1969) were calculated to measure the magnitude of the change in variables from Phase 1 to Phase 2. Intraclass correlation coefficients were calculated using a two-way mixed effect model to examine stability over the two phases. Independent sample t-tests were used to examine differences in physical characteristics between girls whose PA had decreased and girls whose PA levels had increased over the 12 months.

A repeated measures (Phase X Stage) MANOVA was used to examine the influence of maturation at Phase 2 on changes in PA, physical characteristics and physical self-perceptions.

In order to determine whether changes in physical characteristics, physical self-perceptions and maturation influenced change in PA, a two-step analytical strategy was used, consistent with Crocker, et al. (2006). Firstly, the standardised residual or change score in all of the variables over the 12 months was determined using regression analysis (Field, 2005), with Phase 1 being the independent variable and Phase 2 being the dependent variable. The resulting residual change score reflects the degree of change from Phase 1 to Phase 2. Correlations between PA, physical characteristics, maturation and physical self-perceptions were examined and those variables significantly related to PA were entered into the regression equation. The physical self-worth variable was not included in the regression analysis since the four CY-PSPP (Whitehead, 1995) subscales represent specific dimensions of the physical self and are collectively strong predictors of overall physical self worth. Therefore, subsequent multiple regression analysis involved entry of the standardised residuals of sport competence, physical condition and strength competence subscales at Step One. This

strategy allowed identification of key physical self-perception subscales that were associated with the change in PA over the 12 month period.

In order to determine whether changes in maturation and physical characteristics influenced changes in physical self-perceptions, a two-step analytical strategy was used, consistent with Crocker, et al. (2006). Firstly, the standardised residual or change score in all of the variables over the 12 months was determined using regression analysis (Field, 2005), with Phase 1 being the independent variable and Phase 2 being the dependent variable. The resulting residual change score reflects the degree of change from Phase 1 to Phase 2. Correlations between physical characteristics, maturation and physical self-perceptions were examined and those significantly related to the physical self-perception variables were entered into the regression. Therefore, subsequent multiple regression analysis involved entry of the standardised residuals of body mass and sum of skinfolds at Step One (Field, 2005). This strategy allowed identification of key physical characteristics that were associated with changes in physical self-perceptions over the 12 month period.

4.3 Results

4.3.1 Cross-sectional findings – Phase 1

Table 4.1 illustrates the descriptive data for each maturation stage and the entire sample ($N = 201$) for PA and physical self-perceptions at Phase 1. One hundred and two of the girls were classified at the early stages of maturation; 76 of the girls were classified at the mid stage of maturation and 23 of the girls were classified at the late stage of maturation.

Table 4.1: Mean (\pm standard deviation) scores for physical activity and physical self-perceptions by maturation stage and for the total sample at Phase 1

Variable (<i>N</i> =201)	Maturation Stage			
	Early stage (<i>N</i> =102)	Mid stage (<i>N</i> =76)	Late stage (<i>N</i> =23)	All (<i>N</i> =201)
PAQ-C score (max = 5)	3.03 \pm 0.67	3.08 \pm 0.72	3.30 \pm 0.72	3.08 \pm 0.70
CY-PSPP – sport competence (max = 4)	2.79 \pm 0.60	2.72 \pm 0.64	2.76 \pm 0.49	2.76 \pm 0.60
CY-PSPP – physical condition (max = 4)	2.78 \pm 0.58	2.82 \pm 0.62	2.73 \pm 0.63	2.79 \pm 0.60
CY-PSPP – body attractiveness (max = 4)	2.66 \pm 0.58*	2.32 \pm 0.71	2.32 \pm 0.70	2.49 \pm 0.66
CY-PSPP – strength competence (max = 4)	2.49 \pm 0.52	2.53 \pm 0.62	2.57 \pm 0.63	2.51 \pm 0.57
CY-PSPP – physical self-worth (max = 4)	2.89 \pm 0.58*	2.64 \pm 0.70	2.57 \pm 0.68	2.76 \pm 0.65

*, significant difference between early and mid maturation stages, $p < .01$

Table 4.2 shows the relationship between PA, maturation, physical characteristics and physical self-perceptions at Phase 1

Table 4.2: Pearson Correlation Coefficients for physical activity, maturation, physical characteristics and physical self-perceptions at Phase 1

Variable	1	2	3	4	5	6	7	8	9	10
1. PAQ-C score	-									
2. PDS	.09	-								
3. Body mass (kg)	.05	.43*	-							
4. Waist circumference (cm)	.002	.32*	.89*	-						
5. Sum of skinfolds (mm)	-.08	.20*	.75*	.82*	-					
6. Sport competence†	.44*	-.03	-.15	-.21*	-.33*	-				
7. Body attractiveness†	.21*	-.22*	-.41*	-.45*	-.49*	.47*	-			
8. Physical condition†	.46*	-.005	-.15	-.25*	-.31*	.72*	.34*	-		
9. Strength competence†	.38*	.05	.01	-.03	-.10	.64*	.36*	.49*	-	
10. Physical self-worth†	.30*	-.18	-.32*	-.37*	-.43*	.64*	.79*	.53*	.48*	-

*, significance ($p < .01$); PAQ-C: Physical Activity Questionnaire for Children; PDS: Pubertal Development Scale; † denotes CY-PSPP (Children and Youth's Physical Self-Perception Profile) subscales (max score = 4)

A one-way ANOVA indicated that there were no significant differences between participants in the three maturation stages on level of PA ($F_{(2, 201)} = 0.97, p = .38$).

A MANOVA indicated that there was a significant difference between participants in the three maturation stages on physical self-perceptions ($F_{(5, 200)} = 1.98, p = .035$; power = 0.88; partial $\eta^2 = 0.05$). Follow-up planned one-way ANOVAs with appropriate post-hoc analyses indicated that there were significant differences between the three maturation stages on body attractiveness ($F_{(2, 200)} = 5.99, p = .003$) and physical self-worth ($F_{(2, 200)} = 3.53, p = .031$) with girls at the early maturation stage reporting significantly more positive levels of body attractiveness and physical self-worth than girls at the mid maturation stage. There were no significant differences between the maturation stages on perceptions of sport competence, physical condition and strength competence.

4.3.2 Cross-sectional findings – Phase 2

Table 4.3 shows the relationship between the physical characteristics, physical self-perceptions, maturation and PA at Phase 2.

Twenty-four of the girls were classified at the early stages of maturation; 87 of the girls were classified at the mid stage of maturation and 39 of the girls were classified at the late stage of maturation (Table 4.4).

Table 4.3: Pearson Correlation Coefficients for physical activity, maturation, physical characteristics and physical self-perceptions at Phase 2

Variable	1	2	3	4	5	6	7	8	9	10
1. PAQ-C score	-									
2. PDS	-.06	-								
3. Body mass (kg)	-.05	.40*	-							
4. Waist circumference (cm)	-.07	.23*	.77*	-						
5. Sum of skinfolds (mm)	-.12	.23*	.82*	.76*	-					
6. Sport competence†	.48*	-.07	-.14	-.23*	-.32*	-				
7. Body attractiveness†	.23*	-.07	-.50*	-.51*	-.57*	.44*	-			
8. Physical condition†	.46*	-.06	-.21*	-.31*	-.38*	.77*	.49*	-		
9. Strength competence†	.29*	-.09	.08	-.08	-.17	.70*	.40*	.59*	-	
10. Physical self-worth†	.37*	-.12	-.47*	-.44*	-.55*	.62*	.83*	.64*	.51*	-

*, significance ($p < .01$); PAQ-C: Physical Activity Questionnaire for Children; PDS: Pubertal Development Scale; † denotes CY-PSPP (Children and Youth's Physical Self-Perception Profile) subscales (max score = 4)

A one-way ANOVA indicated that there were no significant differences between participants in the three maturation stages on level of PA ($F_{(2, 155)} = 1.18, p = .31$).

A MANOVA indicated that there were no significant differences between participants in the three maturation stages on physical self-perceptions ($F_{(5, 155)} = 1.35, p = .203$; power = 0.69; partial $\eta^2 = 0.04$).

4.3.3 Longitudinal findings

Table 4.4 illustrates the means, standard deviations, effect sizes and intraclass correlation coefficients for physical characteristics, physical self-perceptions and PA for Phase 1 and Phase 2 data. The mean PA levels were significantly lower in Phase 2 (2.78 ± 0.57) than in Phase 1 (3.06 ± 0.71), $t(155) = 5.42, p = .001$.

There were overall significant decreases from Phase 1 to Phase 2 on the physical self-perception subscales of body attractiveness, $t(155) = 2.41, p = .017$ and physical self-worth, $t(155) = 3.96, p < .001$.

The participants increased significantly in body mass, $t(151) = -21.89, p < .001$, waist circumference, $t(152) = -4.14, p < .001$ and sum of skinfolds, $t(149) = -9.71, p < .001$, from Phase 1 to Phase 2.

There were 52 of the girls in the early stages of maturation at Phase 1 that progressed to the mid stages of maturation; 7 of the girls in the early stages of maturation progressed to the late stage of maturation and 16 of the girls in the mid stages of maturation progressed to the late stage of maturation. There were 75 of the girls who remained at the same maturation stage.

Table 4.4: Descriptive statistics for physical activity, physical characteristics and physical self-perceptions across maturation stages over 12 months

Maturation Stage	Phase 1				Phase 2				<i>d</i>	ICC
	Early stage	Mid stage	Late stage	Total	Early stage	Mid stage	Late stage	Total		
<i>N</i>	79	53	18	150	24	87	39	150		
PAQ-C score	3.02 ± 0.66	3.11 ± 0.77	3.17 ± 0.79	3.06 ± 0.71	2.92 ± 0.61	2.76 ± 0.50	2.79 ± 0.65	2.78 ± 0.57**	.40**	0.50
Body mass (kg)	38.6 ± 6.8	47.1 ± 8.7	50.3 ± 5.2	42.9 ± 8.80	43.1 ± 9.1	47.7 ± 9.3	55.1 ± 8.4	48.9 ± 9.9**	.68**	0.94
Waist circumference (cm)	61.5 ± 5.3	66.6 ± 7.4	67.5 ± 6.0	63.9 ± 6.7	62.5 ± 12.0	65.2 ± 6.7	68.6 ± 9.7	65.7 ± 8.7**	.27**	0.77
Sum of skinfolds (mm)	60.5 ± 22.4	73.6 ± 26.2	71.2 ± 25.3	66.3 ± 24.6	70.2 ± 33.0	74.4 ± 28.4	89.4 ± 26.8	77.2 ± 29.5**	.44**	0.87
Sport competence†	2.80 ± 0.61	2.78 ± 0.66	2.85 ± 0.50	2.79 ± 0.61	2.87 ± 0.69	2.73 ± 0.60	2.72 ± 0.50	2.76 ± 0.60	.05	0.66
Body attractiveness†	2.69 ± 0.55	2.32 ± 0.71	2.40 ± 0.77	2.53 ± 0.66	2.60 ± 0.76	2.37 ± 0.62	2.39 ± 0.69	2.42 ± 0.67*	.17*	0.63
Physical condition†	2.79 ± 0.56	2.84 ± 0.58	2.73 ± 0.68	2.79 ± 0.57	2.84 ± 0.78	2.74 ± 0.54	2.73 ± 0.62	2.76 ± 0.60	.05	0.67
Strength competence†	2.48 ± 0.48	2.52 ± 0.63	2.63 ± 0.68	2.50 ± 0.56	2.53 ± 0.49	2.47 ± 0.56	2.65 ± 0.52	2.52 ± 0.54	.03	0.69
Physical self-worth†	2.91 ± 0.53	2.67 ± 0.71	2.60 ± 0.71	2.78 ± 0.63	2.84 ± 0.78	2.54 ± 0.61	2.53 ± 0.64	2.60 ± 0.65**	.29**	0.57

*, significant difference between Phase 1 and Phase 2, $p < .05$; **, significant difference between Phase 1 and Phase 2, $p < .01$; *d* is the reported effect size; ICC is single measure intraclass correlation; PAQ-C: Physical Activity Questionnaire for Children (max score = 5); † denotes CY-PSPP (Children and Youth's Physical Self-Perception Profile) subscales (max score = 4)

Table 4.5 details changes in PA over 12 months in relation to segments of the day and week assessed by the PAQ-C. Paired sample t-tests highlighted significant decreases in PA at break-time, lunch-time and after school over the 12 months. There was a significant increase in PA during PE lessons over the 12 months.

Table 4.5: Descriptive statistics for changes in physical activity related to segments of the day and week assessed by the PAQ-C

	Phase 1	Phase 2
Break-time PA	3.06**	2.78
Lunch-time PA	3.47**	2.07
PA during PE	3.76**	4.09
PA after school	3.11*	2.77
Evening PA	2.91	2.81
Weekend PA	2.85	2.93

*, significant difference between Phase 1 and Phase 2, $p < .05$; **, significant difference between Phase 1 and Phase 2, $p < .001$

Examining the change in PA from Phase 1 to Phase 2 indicated that 70.5% ($n = 110$) of the girls' PA levels decreased and 29.5% ($n = 46$) of the girls' PA levels increased. Independent t-tests indicated that girls whose PA levels decreased had significantly greater body mass ($t = 2.19$, $df = 149$, $p = 0.03$) and waist circumference ($t = 1.98$, $df = 149$, $p = 0.05$) than the girls whose PA levels increased over the 12 months. However, there was no significant difference in sum of skinfolds ($t = .89$, $df = 149$, $p = 0.38$) between girls whose PA had decreased and those whose PA had increased over the 12 months.

A repeated measures 2 (Phase) X 3 (Maturation Stage) MANOVA identified that the change in sum of skinfolds from Phase 1 to Phase 2 was significantly affected by the maturation stage the participants were assigned to in Phase 2 ($F_{(2,144)} = 8.24$, $p < .01$). The change in body mass ($F_{(2,146)} = 1.27$, $p = .28$) and waist circumference ($F_{(2,147)} =$

0.86, $p = .43$) from Phase 1 to Phase 2 were not significantly affected by the maturation stage the participants were assigned to in Phase 2.

A repeated measures 2 (Phase) X 3 (Maturation Stage) MANOVA identified that the changes in the physical self-perception subscales from Phase 1 to Phase 2 were not significantly affected by the maturation stage the participants were assigned to at Phase 2: sport competence ($F_{(2,150)} = 0.75, p = .48$); body attractiveness ($F_{(2,150)} = 1.16, p = .32$); physical condition ($F_{(2,150)} = 0.20, p = .82$); physical strength ($F_{(2,150)} = 1.94, p = .15$); physical self-worth ($F_{(2,150)} = 0.02, p = .91$).

A repeated measures 2 (Phase) X 3 (Maturation Stage) MANOVA identified that the change in PA from Phase 1 to Phase 2 was not significantly affected by the maturation stage the participants were assigned to in Phase 2 ($F_{(2,150)} = 0.09, p = .92$).

The correlations among standardised residual change scores for PA, maturation, physical characteristics and physical self-perceptions are shown in Table 4.6. Change in maturation or physical characteristics was not associated with the change in PA. However correlations indicated that PA change was associated with change in all of the physical self-perception subscales except body attractiveness, with sport competence being the dominant correlate ($r = .31$). Multiple regression analysis indicated that the physical self-perception subscales accounted for 10% of the explained variance in PA change. In the model, only the physical self-perception subscale of sport competence was a significant individual predictor of PA (Table 4.7).

Table 4.6: Pearson Correlation Coefficients for physical activity, maturation, physical characteristics and physical self-perceptions change standardised residuals

Variable	1	2	3	4	5	6	7	8	9	10
1. PAQ-C score	-									
2. PDS score	-.13	-								
3. Body mass (kg)	-.04	.06	-							
4. Waist circumference (cm)	-.01	-.08	-.27*	-						
5. Sum of skinfolds	-.05	.02	-.55*	-.15	-					
6. Sport competence†	.31*	-.06	-.12	.08	-.09	-				
7. Body attractiveness†	.17	-.04	-.30*	-.10	-.22*	.32*	-			
8. Physical condition†	.29*	-.09	-.16	.07	-.06	.53*	.26*	-		
9. Physical strength†	.20*	.07	-.07	.03	-.13	.55*	.42*	.53*	-	
10. Physical self-worth†	.28*	-.07	-.27*	-.09	-.22*	.42*	.71*	.35*	.52*	-

*, significance ($p < .05$) PAQ-C: Physical Activity Questionnaire for Children (max = 5); PDS: Pubertal Development Scale (max = 4); † denotes CY-PSPP (Children and Youth's Physical Self-Perception Profile) subscales (max score = 4)

Table 4.7: Multiple regression analysis examining predictors of change in physical activity

Step 1	Variable	B	SE B	β
1	Physical self-perceptions			
	Sport Competence	.221	.096	.221*
	Physical Condition	.190	.096	.190
	Physical Strength	-.025	.097	-.025

Note. $R^2 = .119$; $R^2\Delta = .10$ ($ps < .05$). * $p < .05$

Correlations indicated that change in sum of skinfolds and body mass was negatively associated with change in the physical self-perception subscales of body attractiveness and physical self-worth (Table 4.6). Multiple regression analysis indicated that the physical characteristics of sum of skinfolds and body mass accounted for 8.9% of the explained variance in the change in perceptions of body attractiveness and 6.9% of the explained variance in the change of overall physical self-worth. In the model, only

body mass was a significant individual predictor of perceptions of body attractiveness and physical self-worth (Tables 4.8 and 4.9).

Table 4.8: Multiple regression analysis examining predictors of change in perceptions of body attractiveness

Step 1	Variable	B	SE B	β
1				
	Body mass	-.276	.094	-.276*
	Sum of skinfolds	-.070	.095	-.069

Note. $R^2 = .102$; $R^2\Delta = .089$ ($ps < .05$). * $p < .05$

Table 4.9: Multiple regression analysis examining predictors of change in physical self-worth

Step 1	Variable	B	SE B	β
1				
	Body mass	-.230	.096	-.228*
	Sum of skinfolds	-.091	.097	-.089

Note. $R^2 = .082$; $R^2\Delta = .069$ ($ps < .05$). * $p < .05$

4.4 Discussion

This study examined the relationships between maturation, physical characteristics, physical self-perceptions and PA in adolescent girls in primary school (Phase 1) and secondary school (Phase 2). In addition, the study addressed changes in physical characteristics, physical self-perceptions and PA behaviour in early adolescent girls over 12 months and how these changes were influenced by maturation.

4.4.1 Cross-sectional findings

The first hypothesis of the study was that physical self-perceptions would be positively related to PA. In support of this hypothesis, perceptions of sport competence, physical condition, body attractiveness, strength competence and physical self-worth were all significant moderate positive correlates of PA at both Phase 1 and 2. These findings are consistent with previous research where physical self-perceptions have been shown to have a positive association with PA in both early adolescents (Raustorp, et al., 2005; Welk & Eklund, 2005) and older adolescents (Crocker, et al., 2000; Raudsepp, et al., 2002). The emergence of physical self-

perceptions as positive correlates of PA provides support for Harter's (1978, 1982) competence motivation theory which predicts that those high in perceived competence will be more likely than others to engage in and continue to participate in PA. Specifically, the findings of this study highlighted that perceptions of sport competence ($r = .43$ – Phase 1; $r = .48$ – Phase 2) and physical condition ($r = .45$ – Phase 1; $r = .46$ – Phase 2) had the strongest association with PA. In support of these findings, research examining the relationship between physical self-perceptions and PA in girls aged 8-12 years by Welk and Eklund (2005), showed that perceptions of sport competence had the strongest relationship with PA ($r = .39$). Similarly, Raustorp, et al. (2005) also found perceptions of sport competence to have the strongest relationship with PA in adolescents aged 11-12 years, compared to all other physical self-perception sub-domains; however this relationship was relatively weak ($r = .19$).

At Phase 1, perceptions of physical condition emerged as the strongest correlate of PA. Perceptions of physical condition encompass perceptions of stamina, condition, fitness, ability to maintain exercise and confidence in an exercise setting (Fox & Corbin, 1989). For girls, the activities commonly involved in during early adolescence also tend to include an element of aerobic fitness and condition, for example brisk walking, aerobics and dance (Inchley, et al., 2008). Findings highlighting perceptions of physical condition as the strongest positive correlate of PA could be due to the concept that participation in non-volitional activities at primary school, for example during PE lessons, regularly involves these characteristics related to perceptions of conditioning. Therefore, the findings suggest that at primary school, the girls' PA levels appear to be mostly influenced by perceptions of their own physical condition compared to other physical self-perceptions. However at Phase 2 in secondary school, perceptions of sport competence emerged as the strongest correlate of PA. Perceptions of sport competence encompass athletic ability, ability to learn sport skills and confidence in sport (Fox & Corbin, 1989). Therefore the findings suggest that during the transition from primary to secondary school, perceptions of sport competence and physical condition remain important correlates of PA behaviour yet at secondary school the girls' PA levels appear to be mostly influenced by perceptions of their sport competence.

In support of the second hypothesis of the study, all physical characteristics were significant, positive correlates of maturation at both Phase 1 and Phase 2, suggesting an increase in body mass, waist circumference and sum of skinfolds are associated with an increase in maturational status. This would be expected as, for girls, the maturational process is characterised by an increase in body mass, primarily due to an increase in percentage body fat compared to lean muscle mass (Malina, et al., 2004) and an increase in body size.

Contrary to the third hypothesis of the study, maturation and physical characteristics were not significantly negatively related to PA at either Phase 1 or Phase 2. The findings suggest that in early adolescence, maturation and the physical characteristics associated with maturation are unrelated to self-report PA. Furthermore, an examination of the influence of maturational status on PA highlighted no significant differences between the PA levels of the girls at each maturation stage at both Phase 1 and Phase 2. The finding that maturational status has a limited influence on the PA behaviour of early adolescent girls is in line with early research by Armstrong, et al. (1990) whose findings suggested that maturation had no influence on sustained levels of PA in both boys and girls aged 11-16 years. More recent cross sectional research by Baker, et al. (2007) showed there were no significant differences in self-report PA levels between early and late maturing girls aged 11 years. Further support for the findings is provided by research by Wickel and Eisenmann (2007) which demonstrated no significant differences in pedometer determined PA in groups of early, average or late maturing adolescents aged 13-14 years.

It was hypothesised that more mature girls would be less active due to the physical changes associated with maturation, for example an increase in percentage body fat and breast development, resulting in the possibility that girls may be 'put off' certain activities. For example, girls may be deterred from gymnastics due to competence and appearance related concerns stemming from maturational changes to their physique. However the findings did not support this hypothesis which could be due to several reasons. Firstly, it is possible that the salience of competence and appearance related concerns are not prevalent in the majority of activities participated in by early adolescent girls, thus reducing the possible influence of maturational status on PA behaviour. Secondly, the majority of girls at both phases were classified as being in the early or middle stages of the maturational process, therefore the possible influence

of maturation on PA may be limited at this early stage in the maturational process. Therefore, the findings could infer that for early adolescent girls, the physical changes associated with maturation (e.g., an increase in percentage body fat and breast development) are not linked to these girls being 'put off' PA participation.

In partial support of the fourth hypothesis of the study, there was evidence of a relationship between aspects of the physical self and maturation. Specifically perceptions of body attractiveness were significantly negatively associated with maturation at Phase 1 ($r = .22$). In addition, there were significant differences in physical self-perceptions between the three maturation stages. Findings highlighted that the girls at the early maturation stage had significantly more positive perceptions of body attractiveness and physical self-worth than the girls at the mid stage of maturation. This finding could be as a result of body changes associated with maturation, particularly an increase in body fat, resulting in a decrease in girls' perceptions of an attractive physique, ability to maintain an attractive body and confidence in appearance. In addition, girls at the early stage of maturation had more positive views of their physical self-worth than girls at the mid stage of maturation with respect to general feelings of happiness, satisfaction, pride respect and confidence in the physical self (Fox & Corbin, 1989). Therefore, this finding could indicate that the physical changes during maturation also contribute to more global perceptions in relation to the physical self in early adolescent girls.

However at Phase 2, perceptions of sport competence, body attractiveness, physical condition, strength competence and physical self-worth were not shown to be significant negative correlates of maturation. Similarly, there were no significant differences in physical self-perceptions between the three maturation stages, contrary to the findings at Phase 1 in primary school. Therefore, at Phase 2 in secondary school where more girls had progressed through the maturational process, there was no relationship between maturation and physical self-perceptions. The finding that maturational status has a negative influence on the perceptions of body attractiveness and physical self-worth in early adolescent girls at Phase 1 is partially supported by research examining the physical self-perceptions of adolescent figure skaters aged 12-22 years (Monsma, et al., 2006). Their findings showed that menarchal status was a stronger correlate of self-perceptions than chronological age, with post-menarchal girls reporting more negative self-perceptions of self-esteem, appearance and sport

competence. However, the influence of maturational status on physical self-perceptions is contrary to recent findings by Altinas and Asci (2008). Their results showed that there was no significant difference between pre- and post-pubertal girls aged 13 years in perceptions of sport competence, physical condition, body attractiveness, strength competence and physical self-worth. However it is important to note that the participants in the study by Altinas and Asci (2008) were only classified as either pre- or post-pubertal which could have had a limiting effect on detecting the possible influence of maturation on physical self-perceptions. Thus the contradictory findings of Phases 1 and 2 regarding the relationship between maturation and physical self-perceptions further emphasises the difficulty in establishing a definite association between these variables, also highlighted by the conflicting research evidence available to date.

Finally at both Phase 1 and 2, the physical characteristics of body mass, waist circumference and sum of skinfolds were all significantly negatively associated with aspects of the physical self, with the exception of a positive relationship between body mass and strength competence. Specifically, for all three measures of physical characteristics, perceptions of body attractiveness emerged as the strongest negative correlate. This finding is consistent with research examining the relationship between body dimensions and physical self-perceptions in early adolescents (Welk & Eklund, 2005) with perceptions of body attractiveness emerging as the strongest negative correlate of percentage body fat. This suggests that early adolescent girls who are physically larger in shape and size appear to have more negative perceptions of body attractiveness. In addition, the findings of the present study highlight that the physical self-perceptions subscale of strength competence was the only positive correlate of body mass, which could suggest that a larger body shape and size is related to more positive perceptions of physical strength.

4.4.2 Longitudinal findings

As expected, over this 12 month period there was advancement in maturational status for the girls, in addition to a change in school environment from primary school to secondary school. In relation to the change in variables over the 12 months and supporting the fifth hypothesis of the study, there was a significant decrease in overall PA levels over the 12 months. This is consistent with a number of studies that have reported a decline in PA during adolescence (Aaron, et al., 2002; Kimm, et al., 2002;

Bromley, et al., 2003; Nelson, Neumark-Stzainer, Hannan, Serrard & Story, 2006). Recently findings from the Physical Activity in Scottish School Children study (PASS; Inchley, et al., 2008) also reported a similar decrease in PA as girls moved from primary school to secondary school, assessed by the PAQ-C (Crocker, et al., 1997). Coupled with the findings of this study, it highlights that the school transitional period is an important period to investigate PA dropout in early adolescent girls and to develop appropriate intervention strategies to reduce this decline in PA.

A detailed examination of the decrease in PA over the 12 months highlighted that there was a significant decrease in PA levels during break-time, lunch-time and immediately after school. PA behaviour during evenings and weekends remained relatively consistent whereas interestingly, PA levels during PE significantly increased during the transition from primary to secondary school. However whether this is due to a change of perception of the level of activity (i.e., the girls may perceive organised sports at secondary school as more 'active' than play and games more likely to be associated with primary school PE) or an actual change in activity levels during PE is not known. These findings suggest that as the girls moved from primary school to secondary school, the decrease in PA was predominantly during the school day and during periods where PA was optional, rather than a decrease in compulsory PA during PE lessons. Although research studies have identified recess periods (i.e., break- and lunch-time) as important contributors to overall PA levels of children at primary school (Ridgers, Stratton, Fairclough & Twisk, 2007; Ridgers, Stratton & Fairclough, 2006), to date there is no known research examining PA levels during recess periods at secondary school. Furthermore, there is no known research specifically examining where changes in PA occur during segments of the day and week during the transition from primary to secondary school. Therefore these findings suggest that further research should examine in detail reasons why these particular periods are susceptible to a decrease in PA levels once the girls are at secondary school.

Although the overall sample demonstrated a significant decrease in PA levels, further analysis of the sample indicated that 70.5% of the girls' PA levels decreased over the 12 months yet 29.5% of the girls' PA levels increased. Findings also indicated that the girls whose PA levels decreased during the transition from primary to secondary school had significantly greater body mass and waist circumference compared to the

girls whose PA levels increased during the transition. However from these findings it cannot be determined whether a greater body mass and waist circumference results in a decrease in PA or whether the decrease in PA results in an increase in body mass and waist circumference in this sample of girls. Yet the findings do provide descriptive data on those girls whose PA levels decrease during the transition from primary school to secondary school allowing further insight into the characteristics of a sub-sample of 'at risk' adolescent girls.

Findings also highlighted that, with the exception of strength competence, physical self-perceptions became less positive over the 12 months. Specifically, perceptions of body attractiveness and physical self-worth were significantly less positive over the 12 months in early adolescent girls. A possible explanation for the significant decrease in certain aspects of the physical self and not others is that in adolescent girls, perceptions of body attractiveness may be formulated on more complex criteria compared to the other competence-related physical self-perception subscales. Therefore, perceptions of body attractiveness could be influenced by other variables unrelated to the physical domain, for example peer evaluation and judgement of body attractiveness, which may have more of an influence on the overall decrease in physical self-worth for early adolescent girls. The decrease in physical self-perceptions evident in the study is consistent with previous research highlighting a decrease in physical self-perceptions with age in early adolescents (Hagger, et al., 2005). Furthermore, perceived appearance has also been shown to decrease from the age of 11 years in adolescent girls (Litunen, et al., 1995) adding additional support for the decrease shown in perceptions of body attractiveness during the school transition. Previous research by Crocker and colleagues (Crocker, et al., 2003; Crocker, et al., 2006) also reported significant decreases in physical self-perceptions over 24 months in adolescent girls aged 14-17 years, yet in contrast to this study's findings, there were significant decreases in perceptions of sport competence, physical condition and strength competence. The difference in research findings could be explained by the age differences of the participants between this study and Crocker's study, possibly indicating that different aspects of the physical self change during the period of adolescence.

In support of the sixth hypothesis of the study, the participants advanced in maturational status and measures of body mass, waist circumference and sum of

skinfolds increased significantly over the 12 months. In relation to the seventh hypothesis that more mature girls will have increased body mass, waist circumference and sum of skinfolds, only partial support was provided. Analysis identified that the increase in sum of skinfolds over the 12 months was influenced by the maturation stage the girls were assigned to (i.e., that the increase in sum of skinfolds, a measure of percentage body fat, was more marked in more mature girls). Findings by Baker, et al. (2007) also highlighted that at age 13 years, early maturing girls had significantly increased percentage body fat more than their later-maturing peers. Previous research has highlighted that early pubertal maturation is linked to poor body image (Michaud, Suris & Deppen, 2006); therefore increasing awareness amongst individuals working with adolescent girls about the possible health implications of the increase in percentage body fat in early maturing girls should be advocated. However, it is important to note that the increases in body mass and waist circumference over the 12 months were not influenced by maturational status. This could be attributed to behavioural choices (e.g., diet) having a possible influence on changes in body shape and size during early adolescence.

It was also hypothesised that the physical changes that accompany maturation would influence the decrease in perceptions of competence and body attractiveness in the physical domain, yet the findings did not support this. In addition, maturational status had no influence on the change in physical self-perceptions over the 12 months. This is contrary to the suggestion that the process of maturation is influential on the physical self during adolescence, particularly in relation to an increase in body dissatisfaction as girls move away from the cultural ideal of a thin and slender body (Rodin, Silberstein & Striegel-Moore, 1985). The findings are supported by recent research by Altinas and Asci (2008) that highlighted no significant differences in physical self-perception subscales in relation to pubertal status. Furthermore, Altinas and Asci (2008) suggested that attaining maturational milestones and changes in biological and physical characteristics are not critical for the physical self-esteem of Turkish adolescents. Similarly, Davison, et al. (2007) examined the relationship between maturation timing and several measures of psychological well-being including: perceived athletic competence, global self-worth and body esteem, in early adolescent girls. Their findings suggested that early maturation had a limited influence on perceptions of athletic competence and body esteem. Based on the longitudinal findings of this study, it would appear that the process of maturation is

not critical for the development of physical self-esteem in early adolescent girls. Therefore, it appears further examination of additional variables that could have influenced the changes in physical self-perceptions evident in this sample of early adolescent girls is needed.

The documented decrease in PA starting around early adolescence occurs at a similar time to the onset of maturation. It was hypothesised that as the girls moved through the maturational process over the 12 months, the physical changes to their body shape and size related to maturation would have a direct negative impact on their PA behaviour. For example, increases in body fat and breast development may result in more mature girls being deterred from activities where their bodies are on display, for example swimming and gymnastics. Yet, contrary to the study's hypothesis, the decline in PA levels over the 12 months was not influenced by maturational status. The lack of a maturational influence on PA behaviour is comparable to early research by Armstrong, et al. (1990) whose findings suggested that maturation had no influence on sustained periods of PA in both boys and girls. However, our research findings are contrary to more recent research evidence (Thompson, Baxter-Jones, Mirwald & Bailey, 2003; Baker, et al., 2007). In particular, Baker and colleagues (Baker, et al., 2007) identified that earlier timing of pubertal development, relative to peers, at age 11 years was associated with lower levels of PA at age 13 years, independent of pre-established PA levels or body fat. However, there are methodological differences between that and the present study which could to some extent explain the different research findings. Baker and colleagues used a combination of objective and subjective measures to classify maturational status compared to the sole use of the self-report PDS (Petersen, et al., 1988), therefore the possible influence of maturation on PA may have been limited in this study. Furthermore, in Baker, et al.'s study the participants were classified as early-maturers or late-maturers relative to their peers unlike this study which used an actual measure of maturation. This could suggest that maturational status relative to peers is more influential on PA behaviour than actual maturational status, however further research is needed to explore this possibility.

Another probable explanation for the lack of maturational influence on the change in PA levels could be due to limited advancement through the maturational process over the 12 months. Although there was evidence of changes in maturational status in a

number of the girls over the 12 months, it remains questionable whether 12 months during early adolescence is a sufficient time-period for the physical characteristics accompanying maturation to develop and subsequently influence PA behaviour. Furthermore, reliance on the self-report PDS as a measure of maturation may have limited the opportunity to detect the possible effects of maturation on PA and consideration of additional measures of maturation, for example Tanner staging, blood oestrodial samples and x-rays to assess skeletal maturation, could have added to the findings.

An examination of the variables that account for the change in PA over the 12 months highlighted that changes in perceptions of sport competence, physical condition and strength competence were shown to be positive correlates of the change in PA. Additionally, 10% of the explained variance in PA was accounted for by physical self-perceptions whilst sport competence was shown to be a significant individual predictor of PA change. This suggests that aspects of the physical self which are most influential on the decrease in PA are related to perceptions of sport competence, encompassing perceptions of athletic ability, ability to learn and confidence in sport (Fox & Corbin, 1989). The findings highlighted that a small percentage (10%) of the variance in PA was accounted for by physical self-perceptions, a finding that is consistent with recent longitudinal research. Crocker and colleagues (Crocker, et al., 2003; Crocker, et al., 2006) assessed the relationship between the physical self-concept and PA in adolescent girls over three years where 12.9% of the explained variance in PA change was accounted for by physical self-perceptions. In relation to significant predictors of the change in PA evident in the girls of the present study, sport competence was shown to be a significant individual predictor of PA change. Yet this is in contrast to the findings of Crocker, et al. (2003; 2006) where physical condition was the only significant individual predictor of PA change over the three years. It is possible that the discrepancy in the research findings could be due to the age difference of the population sample in each study, where Crocker, et al. (2003; 2006) focused on older adolescent girls aged 14-17 years. Overall the findings suggest that although physical self-perceptions have a relatively small influence on the change in PA during both early and late adolescence, certain aspects of the physical self appear to significantly influence change in PA behaviour at different times during the period of adolescence.

These findings adds support to Harter's (1978, 1982) competence motivation theory which predicts that those high in perceived competence will be more likely than others to engage in and continue to participate in PA. Therefore, interventions aiming to increase PA behaviour in early adolescent girls should aim to develop perceptions of physical competence through successful mastery attempts in a positive environment through reinforcement from significant others. Furthermore, perceptions of sport competence appear to be influential on the decrease in PA from primary school to secondary school, therefore interventions should consider examining how perceived sport competence can be positively enhanced once adolescent girls enter secondary school. A possible suggestion would be to introduce PE taster sessions to girls in P7 leading up to the transition from primary school to secondary school. This would allow the girls to be exposed to the different PA environment they will encounter at secondary school in relation to different types of activities in PE and different peers. As a result, positive perceptions of physical competence in this environment could develop gradually prior to the full transition.

It is also important to note that in both the present study and in the findings by Crocker and colleagues, the variance accounted for by physical self-perceptions was small. Therefore, it is apparent that other variables related to PA need to be assessed longitudinally in order to determine their influence on the decrease apparent in PA for adolescent girls. An examination of variables associated with PA behaviour in adolescent girls revealed that other psychological variables, for example a lack of enjoyment and low levels of self-efficacy, could contribute to the decrease in PA (Biddle, Whitehead, et al., 2005). Similarly, consideration of the influence of social, cultural, behavioural and physical environment variables is also needed to determine their possible contribution to the decrease in PA in early adolescent girls (Sallis, et al., 2000; Biddle, Whitehead, et al., 2005).

Despite results indicating that maturation had no direct influence on the change in physical self-perceptions, the change in the physical characteristics of body mass and fat mass, as assessed by sum of skinfolds, were shown to be significant negative correlates of the change in perceptions of body attractiveness and physical self-worth. In addition, body mass was shown to be a significant individual predictor accounting for 8.9% of the change in perceptions of body attractiveness and 6.9% of the change in perceptions of physical self-worth. Therefore, it could be argued that although

maturation may not have a direct influence on physical self-perceptions, the increase in body mass normally associated with maturation could be associated with aspects of the physical self becoming less positive in adolescent girls. However, these aspects of the physical self that were influenced by changes in physical characteristics were not the same aspects of the physical self which were most influential on the decrease in PA. It is also important to note that body mass only accounted for a relatively small amount of the variance in perceptions of body attractiveness and physical self-worth. Therefore, consideration of other potential variables that could influence the decrease in perceptions of body attractiveness and physical self-worth is needed.

4.4.3 Methodological considerations

Methodological issues should be considered when interpreting the findings of this study. The strength of this study is that it used a longitudinal design to examine the influence of maturation and the physical characteristics of maturation on physical self-perceptions and the relationship with PA behaviour in an early adolescent population where physical self-perceptions are relatively unstable (Crocker, et al., 2006). One limitation of the study is the reliance on self-report data to measure both PA and maturation, which could be influenced by accuracy of recall of PA information and social desirability influences. Twisk (2001) suggested that using a combination of different methods to assess PA is the best solution for researchers aiming to obtain a crude indication of habitual PA. However, use of an objective measure of PA alongside the self-report measure was beyond the scope of the study. Furthermore, two of the girls were deemed to have moved down a maturation group over the 12 months as assessed by the self-report PDS, highlighting the methodological shortcomings of a subjective measurement of maturational status. Additionally, a greater number of data time points should be considered for future research as the majority of the girls in the study were only partially through the maturational process.

4.5 Conclusion

Contrary to the original hypotheses, cross-sectional findings at both Phase 1 and 2 highlighted that maturation was not significantly related to PA. In support of these findings, maturational status had no influence on the decrease in PA evident between schools. In addition, body mass, waist circumference and sum of skinfolds were not significantly associated with PA behaviour and had no influence on the decrease in

PA. Therefore both the cross-sectional and longitudinal findings suggest that maturation and the physical characteristics associated with maturation have no direct influence on PA behaviour during the transition between schools over 12 months.

At primary school (Phase 1), cross-sectional findings highlighted that girls in the mid stage of the maturational process had less positive perceptions of body attractiveness and physical self-worth than girls in the early stages of the maturational process. However, in secondary school (Phase 2) the cross-sectional findings showed no significant differences across maturational stages in physical self-perceptions. Furthermore, longitudinal findings highlighted that maturational status had no influence on the changes in physical self-perceptions during the transition between schools. Therefore, although initially findings indicated a possible relationship between maturation and physical self-perceptions, an examination of change in physical self-perceptions over the 12 months suggested that maturation is not related. As such, the original hypothesis (Figure 3.6) of an indirect influence of maturation on PA through physical self-perceptions is not supported by the findings.

Physical self-perceptions were all significantly, positively related to PA at both Phase 1 and 2. However at Phase 1 (primary school), physical condition emerged as the strongest positive correlate whereas at Phase 2 (secondary school) perceptions of sport competence had the strongest relationship with PA. In support of these cross-sectional findings, physical self-perceptions were shown to account for a small amount of the decrease in PA, with perceptions of sport competence emerging as a significant individual predictor of the decrease in PA. Therefore, it appears that the relative importance of aspects of the physical self in relation to PA behaviour shifts as girls enter secondary school, with both the cross-sectional and longitudinal findings supporting the concept that perceptions of sport competence are key in understanding PA behaviour in early adolescent girls. However, from both the cross-sectional and longitudinal findings it is difficult to establish a direct link between the advancement in maturational status and increase in physical characteristics and the decrease in physical self-perceptions and the impact of this on PA during the transition between schools.

The finding that PA levels declined considerably over 12 months in early adolescent girls in itself warrants considerable attention, particularly as this decrease occurred

during the transition from primary school into secondary school. Further analysis indicated that the decrease in PA during break-time, lunch-time and immediately after school appeared to be the major contributors to the overall decrease evident in PA during the transition between schools. Therefore, subsequent exploration of these periods for optional PA behaviour could allow further insight into the decrease in PA during the school transition period. Although the variance in PA was partly accounted for by physical self-perceptions, this was a relatively small contribution and other factors related to this drop in PA need to be considered longitudinally. Therefore, the findings highlight that the decrease in PA during the transition from primary school to secondary school is only partially influenced by certain psychological and biological variables and it is apparent that further research is needed to explore the influence of additional variables. For example, the influence of social and cultural variables, physical environment variables and behavioural variables could be considered in order to understand PA behaviour in this population and furthermore, to inform appropriate and effective intervention practices (Sallis, et al., 2000; Biddle, Whitehead, et al., 2005).

CHAPTER 5: UNDERSTANDING PHYSICAL ACTIVITY BEHAVIOUR THROUGH A NARRATIVE APPROACH

5.1 Introduction

Quantitative findings of study one highlighted that the decrease in physical activity (PA) evident in adolescent girls as they moved from primary school to secondary school was not influenced by their maturational status, and only a small amount of the decrease in PA was accounted for by changes in physical self-perceptions. This would suggest that a further exploration of other contributory variables influencing this decrease is needed. Review findings discussed in Chapter 2 (Sallis, et al., 2000; Biddle, Whitehead, et al., 2005) have highlighted that PA behaviour is complex, and there are likely to be a number of factors influencing PA in children and adolescents, for example additional psychological variables and social/cultural variables, as well as behavioural and physical environment variables. Therefore, the second part of this thesis focuses on exploring the decrease in PA from primary school to secondary school in more detail and to further examine the potential influence of maturation and physical self-perceptions. This is achieved by broadening out the research question to examine the possible influence of additional variables whilst also increasing the depth of understanding through a qualitative approach.

Prior to further discussion of using a qualitative approach, the first section of this chapter will outline the author's positioning on the philosophical assumptions of this thesis in relation to the integration of both a qualitative and quantitative approach and the methodological decisions taken. Following this a brief outline of the characteristics of qualitative research is provided with an examination of qualitative research examining PA behaviour in adolescent girls. The chapter will then move on to introduce a narrative approach to qualitative research and detail the general assumptions of narrative research. Finally, the potential use of narrative inquiry in sport and exercise psychology will be examined with an aim to outline the rationale for using a narrative approach to further understand PA behaviour in adolescent girls.

5.2 Philosophical assumptions

Different research approaches and methods are associated with different epistemologies. The term epistemology refers to a branch of philosophy that is concerned with the theory of knowledge that attempts to answer questions about *what*

we know and *how* we know what we know (Coyle, 2007). The epistemology adopted by a particular study can be determined by a number of factors and in general two distinctive philosophical approaches are evident in relation to quantitative and qualitative research.

Guided by the views and ideas of Lincoln and Guba (1985) and Coyle (2007), it is suggested that positivism relates to the relationship between the world and our perceptions of it being straightforward and independent, where variables are measurable and interact with each other in determinate ways. The positivistic approach is most often associated with quantitative methods (Hardy, Jones & Gould, 1996) where establishing knowledge is achieved through testing hypotheses or causal explanations and assessing degrees of similarity across population samples (Elliot, Fischer & Rennie, 1999). However, Hardy, et al. (1996) argue that adopting a positivistic approach does not allow the researcher to gain an understanding of the richness and complexity of human behaviour, particularly in context-specific situations (Patton, 1990). In contrast, a naturalistic approach (Lincoln & Guba, 1985) assumes that realities are holistic and in order to construct the realities of a specific situation, it involves an enrichment of understanding of the experience of the individual.

Hammersley (1996) advocates that distinguishing between qualitative and quantitative research methods does not accurately reflect the differences in practical methods or the philosophical assumptions of many researchers. Therefore, Hammersley (1996) recommends “a methodologically aware eclecticism in which the full range of options is kept in mind, in terms of both methods and philosophical assumptions” (p. 174). This suggests that there are instances in research where a positivistic quantitative approach is suitable and others where a naturalistic qualitative approach is more appropriate. In this thesis both quantitative and qualitative research methods are used to address the research questions, as such no one philosophical position underpins the methodological procedures. Therefore, considerations regarding the methodological appropriateness of the research approach were driving research decisions rather than philosophical assumptions, as recommended by Patton (1990):

There aren't just two paradigm choices. All kind of variations, combinations and adaptations are available for creative and practical situational

responsiveness.....The issue then becomes not whether one has uniformly adhered to prescribed canons of logical positivism or phenomenology (naturalistic enquiry) but whether one has made sensible method decisions given the purpose of inquiry, the questions being investigated, and the resources available. (p.39)

5.3 Features of qualitative research

The focus of qualitative research is to determine ‘why?’ rather than ‘how many?’ Overall, qualitative research is naturalistic in that it tends to focus on individuals in their natural environment, exploring their perceptions and behaviours whilst emphasising the importance of context and participants’ perspectives. The label ‘qualitative research’ is often used as a generic term for a range of diverse approaches including empirical phenomenology (Giorgi & Giorgi, 2003); grounded theory (Glaser & Strauss, 1967); interpretative phenomenological analysis (Smith, 1996); conversation analysis (Edwards, 1995); narrative inquiry (Polkinghorne, 1998; Crossley, 2000) and discourse analysis (Burr, 1995; Parker 1997). These approaches differ in their philosophical assumptions, their methodology and their understanding of the area under investigation; however all aim to contribute to the enrichment and understanding of a research area, rather than to verify conclusions or theories (Elliot, et al., 1999).

5.4 Qualitative research examining physical activity behaviour

Over ten years ago, Thomas and Nelson (1996) described qualitative methods as ‘the new kid on the block’ in sport and PA research. Historically research into correlates of sport and PA participation has been more likely to adopt quantitative research methods, in the form of undertaking surveys and questionnaires, to understand individuals’ beliefs and attitudes towards sport and PA. Although such research is able to accurately assess the direction and strength of trends in sport and PA participation, an alternative approach is required which is sensitive to the contextual, social, cultural and economic factors which influence sport and PA participation (Holm, Spector, Hicks, Carlson & Lanuza, 2001). Thomas, Nelson and Silverman (2005) advocate that qualitative methods offer this in-depth insight into individuals’ experiences and perceptions of the motives and barriers to PA participation. Furthermore, such qualitative methods are recognised as increasingly important in

developing the evidence base for public health initiatives and policies (Dixon-Woods & Fitzpatrick, 2001).

The amount of qualitative research undertaken in the area of sport and PA participation continues to increase, with evidence of numerous studies adopting this inductive approach. In a recent review by Allender, Cowburn and Foster (2006) of studies which have adopted a qualitative approach to understand PA participation, 24 studies were identified and of these, four focused on research examining PA participation in adolescent girls. Firstly, early research by Coakley and White (1992) used in-depth semi-structured interviews with 26 females aged 13-23 years old to examine their descriptions of sport experiences, how young people defined and interpreted those experiences and how this influenced decisions about participation. Similarly, Cockburn and Clarke (2002) employed in-depth interviews to explore six 13-14 year old girls' experiences and motivations in physical education (PE) lessons. In addition to using only interviews, the remaining two studies in the review combined the use of semi-structured interviews and focus groups to collect their data. Mulvihill, Rivers and Aggleton (2000) used a qualitative exploratory approach in order to access meanings and understanding both informally and interactively on young people's views towards PA. A combination of focus groups and semi-structured interviews was used to collect information from both the parents and young people aged 5-15 years. Similarly, Flintoff and Scranton (2001) explored young women's attitudes and perceptions towards involvement in PA and PE by drawing on focus groups and individual interviews with 21 15 year old girls.

More recently, Whitehead and Biddle (2008) specifically examined the perceptions of PA and PA-related choices of 47 adolescent girls aged 14-16 years using exploratory focus group discussions. Similarly, Jago, et al. (2009) used focus group to explore friendship groups and PA behaviour in adolescents aged 10-11 years. In relation to qualitative research focusing on the PA behaviours of Scottish adolescent girls, in their recent report, 'Increasing demand for sport and PA by girls', Biddle and colleagues (Biddle, Coalter, et al., 2005) adopted a multi-disciplinary approach in their methodology, combining qualitative and quantitative research. Following a general survey on sport and PA participation, female participants were recruited from subsets of the survey for focus group discussions. Additionally, the interview

schedule was developed based on findings from the survey and aimed to examine in greater depth issues relating to high or low PA participation levels.

It is apparent that both individual interviews and focus group interviews have been used effectively in previous research examining PA behaviour in adolescents. Focus group interviewing is a social-oriented research procedure and as such lends itself to populations such as adolescent girls; it is relatively low cost and the format allows flexibility for the researcher to probe unanticipated issues (Kruger, 1994). However, although it is a social-oriented research procedure, such an environment of open discussion may lead to a lack of contribution from some participants and an over-contribution of others. This is particularly pertinent to the research question of this thesis, where discussing the physical changes that are happening during maturation is an individual and sensitive issue which may not be appropriate to openly discuss in a group setting. Similarly, focus groups can be less appropriate if the purpose of the research is to categorise or compare types of individuals and the views and responses they contribute (Wilkinson, 2003). Examination of individual reasons for a decrease in PA levels in adolescent girls over the school transition period is a key focus of the qualitative research in this thesis. In addition, the potential influence of maturation, the physical changes associated with maturation and physical self-perceptions on the decrease in PA during this transitional period will also be further explored; therefore, conducting focus groups may not be the most suitable and effective way of collecting this information to fully answer the research questions. Therefore, using one-to-one interviews may be more fruitful in teasing out the individual girls' perspectives of their decrease in PA.

5.5 Introduction to narrative research

Within the literature there are numerous definitions of what narrative is and therefore obtaining an exact definition is difficult. Murray (2003) defines narrative as an organised interpretation of a sequence of events. However, due to the variations of narrative research and the flexible manner in which it can be used, Overcash (2003) highlights the importance of the researcher providing a clear definition of narrative in the context of their particular research. Essentially a narrative is used to describe the variety of ways in which humans 'tell a story' and is perceived as a common and natural way of conveying their personal experiences (Bruner, 1990). Therefore, the assumption in narrative research is that we are interested in learning something about

other individuals' narratives and how those narratives influence psychological and social realities (Crossley, 2000). According to Polkinghorne (1995) qualitative researchers have become increasingly interested in narrative forms of inquiry because narrative is the "linguistic form uniquely suited for displaying human existence as situated action" (p. 5) and according to narrative theory (e.g. Sarbin, 1986; Murray, 1999) we are born into a storied world and we live our lives through the creation and exchange of narratives. In terms of clarifying what narrative is, there are numerous definitions available as narrative can be interpreted in different ways. Recently Smith and Sparkes (2009a) combined several strands of thought (e.g. Cobley, 2001; Czarniawski, 2004; Elliott, 2005) to define narrative as, "a complex genre that routinely contains a *point* and *characters* along with a *plot* connecting *events* that unfold *sequentially* over *time* and *in space* to provide an overarching *explanation* or *consequence*" (p. 2) [italics added in original reference].

5.6 Characteristics and features of narrative research

The discussion on the characteristics and features of narrative research is drawn from a wide range of narrative literature and from a variety of different research disciplines. Throughout the literature it is argued that selves and identities are constituted through narratives (Crossley, 2000). An individual's sense of self and identity (i.e. who I am) is structured through the textual resources of narratives and are generated and performed in the process of storytelling with others (Eakin, 1999). Narrative not only brings order and meaning to everyday life but reflexively, it also provides structure to our very sense of selfhood. We tell stories about ourselves and to others and as a result we create a narrative identity (Murray, 2003).

Murray (2003) also suggests that we can hold a variety of narrative identities, each of which is connected to different social relationships. This leads to the personal and social dimension of a narrative. Although the narratives people tell are personalised and unique, they are also constructed within a social context; they are a cultural creation (Smith & Sparkes, 2009a). Although the narrator tells the story, the character(s) of the story will depend upon whom the story is being told to, the relationship between the narrator and the audience and the broad social and cultural context (Murray, 1999). For example, the story an adolescent will recall to their peers will be different to that they recall to their parents due to the difference in social and cultural contexts. In addition, an individual's story is shaped, facilitated and

constrained by the culture in which they are emerged in and will inevitably influence both how their story is told and what their story consists of. Therefore, a feature of narrative is that it views the stories people tell as both personal and social (Smith & Sparkes, 2009a).

Narrative is also a primary way of organising our experience of time. Sparkes and Smith (2003) support this and suggest that one can turn to narrative based on the tenet that perceptions of time are experienced according to narratives of past, present or future by which experience is structured, given meaning and communicated. Therefore, as well as creating a personal narrative within a social and cultural context, the narrative can be structured within a meaningful timeframe, relevant to the context of an experience. A recent example in the research is the exploration of how time is storied by young athletes in relation to their experiences and expectations of ageing (Phoenix, Smith & Sparkes, 2007) where intimate connections between time, self and society are made in their stories.

Drawing from the literature on the assumptions, characteristics and functions of narrative research, for the purpose of this thesis, a narrative is described as, a means of story-telling, shaped by personal, social and cultural experience(s) organised over time. Narratives also provide structure to an individual's sense of selfhood and identity, within the context of their experience(s).

5.7 Collection of narratives

Overcash (2003) highlights that narrative is not just simply storytelling, it is a process like any other research methodology. The primary aim of narrative research is to produce detailed, 'information-rich' data (Crossley, 2000) and this can be derived from a variety of sources, for example naturally occurring conversations, diaries and autobiographies (Gibbs, 2007). However the primary source of material for the narrative researcher is the interview (Murray, 2003). The narrative interview is designed to provide an opportunity for the participant to give a detailed account of a particular experience. Based upon the idea of a semi-structured interview, the narrative researcher will have a series of questions on an interview schedule: however the interview will merely be *guided* by the interview schedule not dictated by it. This allows the narrative researcher to establish rapport with the respondent, follow the respondent's interests or concerns and pursue interesting areas that may arise from the

narrative. Mishler (1986) also stressed the importance of the narrative researcher during the narrative interview:

The interviewer's presence and form of involvement – how he or she listens, attends, encourages, interprets, digresses, initiates topics and terminates responses- it's integral to a respondent's account. It is in this specific sense that a 'story' is a joint production. (p. 82)

Furthermore, the challenge for narrative researchers is to convince the participants that they are interested in their narrative accounts. Smith (2003) suggests that in order to achieve this, the researcher should reflect upon what the participants are saying throughout the interview and collect background material on the participants.

5.8 Narrative analysis

Although Overcash (2003) does point out that, "the beauty of narrative methods is in the diversity and malleability of the methodology in capturing the human experience" (p. 183), there is only partial and often subjective guidance available within the literature as to the exact methodology preferred to achieve narrative analysis. Furthermore, the meaning of different narratives is not always apparent and the analysis of such narratives can be approached in different ways by different researchers (Smith, 2003). Smith and Sparkes (2009b) consider narrative analysis as an umbrella term that accounts for research where the story itself is the source of enquiry in addition to the account, report or interview. Similarly, Overcash (2003) highlights that narrative research is not only the stories or accounts contributed by the participant, it is also the evaluating and analysing of those accounts. Unlike any other forms of qualitative research that tend to primarily use thematic analysis, the aim of analysing narrative research is to take the full narrative account, to examine how it is structured and to connect it to the broader context. Therefore, when making sense of narrative data there is room for both thematic analysis and examining narrative in the raw form of the individual's story (Overcash, 2003). As identified by Holstein and Gubrium, narrative analysis attempts to understand the 'whats' (i.e., content) of the story and the 'hows' (i.e., structure) of the story.

5.8.1 Identifying the ‘whats’ of the story

In order to determine the content (i.e., the ‘whats’) of a story, there are a number of methods available to narrative researchers including paradigmatic analysis (Polkinghorne, 1995), categorical-content analysis (Lieblich, Tuval-Mashiach & Zilbar, 1998) and interpretative phenomenological analysis (Smith, 1996). Polkinghorne (1995) suggests that a paradigmatic analysis of narrative allows the researcher to seek central themes, typologies or paradigms within the narrative. In essence, paradigmatic narrative analysis is comparable to thematic analysis where paradigms or themes are embedded in the text or narrative. According to Oliver (1998), most narrative inquiry in qualitative research is conducted using the paradigmatic analysis method. Outlining its main strength in terms of capacity to develop general knowledge about the stories collected, Oliver did caution that, “although paradigmatic analysis remains abstract and formal, it often misses the uniqueness of each story because it relies on the researcher’s perceived categorization” (p. 249-250). In order to identify the ‘whats’ of the stories told, previous narrative research by Sparkes and Partington (2003) used categorical-content analysis of their transcripts. According to Lieblich, et al. (1998), this is where, “categories of the studied topic are defined, and separate utterances of the text are extracted, classified and gathered into these categories/groups” (p. 13). In contrast to this, interpretative phenomenological analysis (IPA) involves building up emerging themes and ideas using a ‘bottom-up approach’ where categories are not pre-determined, allowing the uniqueness of each story to be maintained.

5.8.2 Interpretative phenomenological analysis

The aim of IPA is to explore in detail how participants make sense of their personal and social world (Smith & Osborn, 2003). IPA can be described as an inductive, idiographic and hermeneutic approach to qualitative research, focusing on the participants’ understanding of a particular topic (Darker, Larkin & French, 2007). Thus, in accordance with its phenomenological origins, IPA is concerned with trying to understand the viewpoint of the participant and draws conclusions about a specific group’s perceptions, rather than inferring generalisations. IPA also underlines the active role that the researcher plays in the process of examining participants’ experiences (Smith & Osborn, 2003), resulting in the researchers’ own interpretations of the participants’ world being a central facet of IPA. Essentially a double

hermeneutic is involved (Smith, 2008) where the participant is trying to make sense of a particular experience and the researcher is also trying to make sense and interpret the participant's sense of their experience. Research questions of IPA are usually framed broadly and openly, where there is no attempt to test a predetermined hypothesis. Instead the aim is to explore an area of interest in more detail and in a flexible manner. Therefore, IPA tends to use purposive sampling of participants where a group closely defined by the research question is identified.

5.8.3 Identifying the 'hows' of the story

As well as examining the thematic content of narratives, the narrative structure of people's stories can be considered. This includes considering the structure and form, identifying elements that formulate the narrative and identifying the kind of story being told and how it works for both storyteller and the listener (Sparkes, 1999). In addition, the researcher can also consider the personal, interpersonal, group and societal contexts within the narrative. However, Murray (2003) does caution that it may be difficult to integrate all these contextual levels into a single analysis; therefore attention to one or the other may be considered particularly important in understanding the structure of certain narratives. Consequently, the understanding of structural analysis and its use as a method of analysis in this thesis was informed by the work of several researchers (Sparkes, 1999; Gubrium & Holstein, 1998; Crossley, 2000; Sparkes & Partington, 2003; Partington, Partington, Fishwick & Allin, 2005; Smith & Sparkes, 2009a).

5.8.4 Structural analysis

The primary aim of structural analysis is a focus on how the narrative is structured and organised by individuals and how they relate their story to their listener (Murray, 2003). Although narrative experiences recalled by a group of individuals may share common themes and viewpoints, *how* these stories are told often differ greatly, which has been shown in previous narrative research. For example, in her research interviewing women from various racial and ethnic backgrounds employed as superintendents in school systems, Chase (1995) found that this shared common experience still resulted in distinct and diverse individual narratives. Using a structural mode of narrative analysis, as suggested by Smith and Sparkes (2009a), allows an independent focus on the formal plot and organisation of the story to independently tease out distinct structures that hold it together. Consequently,

structural analysis can allow each story to be examined for particular narrative elements (refer to Chapter 6 for further detail), for example narrative ownership (Holstein & Gubrium, 1995); narrative type (Sparkes, 1999); narrative tone (Crossley, 2000); narrative characters (Murray, 1997) and narrative culture (Smith & Sparkes, 2009a).

5.9 Narrative research in sport and exercise psychology

Until recently, the majority of narrative research within psychology and social sciences predominated in a clinical or educational setting, with few studies examining the use of narrative practice in the realm of sport and exercise psychology. Sparkes and Partington (2003) outlined the potential benefits of utilising a narrative approach in sport psychology through the area of flow and concluded that narrative practice adds to the ‘analytical diversity’ available in sport and exercise psychology and is worthy of further attention. Recently a valuable contribution to the narrative literature in sport and exercise psychology research has been made by Smith and Sparkes (2009a). In their article, Smith and Sparkes (2009a) provide a detailed discussion on the use of narrative inquiry in sport, exercise and health psychology.

In addition to the potential benefits of narrative inquiry, Smith and Sparkes (2009a) highlighted how research in sport and exercise psychology has also used a narrative approach to allow an in-depth exploration of athletes’ careers. Early research by Denison (1996) advocated the narrative approach as, “a means of exploring sports retirement in a more evocative way, employing such devices as flashback, alternative points of view and dialogue to open up the dimension of mystery that surrounds athletes’ retirement experiences” (p. 352). Similarly, recent research by Partington and colleagues (Partington, et al., 2005) has drawn upon the potentially heightened relevance of the middle years in sport as a crisis point and has explored the ways in which people negotiate sporting mid-life through their narrative accounts. This recurring theme of disruption within a sporting career is explored using narratives in recent research by Smith and Sparkes (2008), as a method to explore the life story of an athlete who experienced a spinal cord injury and became disabled through playing rugby.

It is clear that the potential role of narrative within sport and exercise psychology research is growing and developing. In each aforementioned example the ‘story’ is

specific to the research questions and hypotheses of that study and therefore offers a limited relevance in relation to the research questions of this thesis. The following discussion will focus upon the potential use of narrative inquiry to further understanding of the decrease in PA behaviour of adolescent girls during the transition from primary school to secondary school. This is achieved by drawing from Smith and Sparkes' (2009a) comprehensive article on the use of narrative inquiry in sport and exercise psychology research and previous literature reviewed in this chapter.

5.10 The role of narrative inquiry in understanding physical activity behaviour in adolescent girls

Although there is no known research within sport and exercise psychology exploring young people's narratives, Valentine (2000) advocates that children are able to create their own individual narrative. Furthermore, given the potential of stories to inspire, Smith and Sparkes (2009a) point out that narrative inquiry may help the researcher to find inspiration to deal with specific social challenges in a new and innovative way. In relation to PA behaviour in adolescent girls, although relatively limited, the majority of qualitative research to date has used focus groups and interviews to gather information. Using narrative inquiry may allow a unique and fresh perspective on this area of research as well as complementing the existing quantitative findings relating to the PA behaviour of adolescent girls in study one of this thesis.

Previous narrative research in sport and exercise psychology has predominantly been used to explore life changing experiences for athletes, for example retirement from sport (Denison, 1996); disability resulting from a sporting injury (Smith & Sparkes, 2008); the experience of flow in sport (Sparkes & Partington, 2003) and negotiating sporting mid-life (Partington, et al., 2005). Through narrative the researchers were able to gain an in-depth, personalised view of the individual's experience throughout this life-changing event. Gibbs (2007) suggests that adopting a narrative approach can be particularly effective if the person is asked to recount their experiences of a turning point in their lives and for adolescent girls the transition from primary school into secondary school qualifies as a major transition experience and is specific to each individual. Furthermore, quantitative findings from study one highlighted a significant decrease in PA during this transitional period. As such, it is anticipated that through

narrative the author will gain a unique insight into each individual girls' transition story in relation to PA behaviour.

Narrative is a primary way of organising our experience of temporality and time is an inescapable fact of human existence (Phoenix et al., 2007). Smith and Sparkes (2009a) suggest that narratives of past, present and future are a flexible and dynamic means by which temporality and experience can be structured. For example, Phoenix and colleagues (2007) explored how time is storied by young athletes in relation to their experiences and expectations of aging. Using narrative interviews as a means for the girls to recall their PA behaviour from the past through to the present could allow a comprehensive exploration of any change in behaviour over time, in line with the existing quantitative research findings from this thesis.

During adolescence, a variety of important changes occur in the realm of identity development (Erikson, 1959). Acceptance of one's own physical appearance and the physical changes involved with growth and maturation is a key developmental task in the development of the self during adolescence (Havighurst, 1972). Furthermore, Brettschneider and Heim (1997) suggest that the rapidly changing physical appearance through the process of maturation provides an additional challenge to the formation of a coherent identity. Eakin (1999) suggests that narratives help make sense of our identity and self, with an individual's sense of self being structured through the textual resources of narratives. During adolescence when identity is constantly developing, the narratives of the girls could allow an insight into the construction, revision and reconstruction of the self, particularly the physical self and how this process may relate to PA behaviour.

Narrative inquiry also views the stories people tell as both personal and social (Smith & Sparkes, 2009a). Furthermore, an individual's own story is shaped, facilitated and constrained by narratives that circulate within the culture in which they are immersed. This allows the narrative researcher to move beyond an individualistic focus to a more complex exploration of people as both social and individual beings (Smith & Sparkes, 2009a). Therefore, it is possible that by examining the decrease in PA behaviour from primary school to secondary school, family, peer and school cultural influences may emerge from the girls' narratives.

Finally, meaning can be created through narrative and within the area of sport and exercise psychology researchers have explored the connection of meaning and narrative. For example, Douglas and Carless (2006) used narratives to understand the experiences of female professional golfers and to explore what golf *meant* to them in order to help develop appropriate and practical training programmes. It is hoped that the meaning of PA will emerge for each individual through narrative inquiry with an aim to help inform the development of more tailor-made PA interventions for adolescent girls. This is advocated by Smith and Sparkes (2009b) who identified that the limited ‘one fits all’ model of PA behaviour could be improved using narrative inquiry, allowing the development of more specific and appropriate intervention strategies.

5.11 Conclusion

A narrative approach to research has enormous potential as a new and innovative form of inquiry for qualitative researchers within sport and exercise psychology. In addition, Gibbs (2007) has suggested that a narrative approach can work particularly well if the person is asked to recount their experiences of a turning point in their lives and for adolescent girls the transition from primary school into secondary school qualifies as a major transition experience. As such, adopting narrative enquiry may prove fruitful in exploring this transition. Smith and Sparkes (2009a) argue that when narrative inquiry is done well it provides a powerful means of understanding individuals in new and exciting ways, yet they do stipulate that it is vital that researchers get out there and do the research. To date there is no known research using narrative inquiry to understand the PA behaviour of adolescent girls. As such, the author decided to adopt a narrative approach to qualitative research, in order to gain an individual and in-depth understanding of the decrease in the PA of adolescent girls during the transition between schools. In addition, a narrative approach will also be used to further explore the influence of maturation, the physical changes associated with maturation and physical self-perceptions on the decrease in PA during this transitional period.

CHAPTER 6: STUDY 2 - EXPLORING THE DECREASE IN GIRLS' PHYSICAL ACTIVITY FROM PRIMARY TO SECONDARY SCHOOL: A NARRATIVE APPROACH

6.1 Introduction

In order to explore human experience in detail, researchers will tend to turn to qualitative research (Ashworth, 2003). Qualitative research is essentially inductive in its approach, with findings and conclusions being drawn directly from the data. In a recent review of studies which have adopted qualitative methodology to understand physical activity (PA) participation, Allender and colleagues (Allender, et al., 2006) found that of the four studies examining PA participation in girls and young women, all employed either focus groups or semi-structured interviews to collect data. Although PA behaviour in Scottish adolescent girls has been previously examined using focus groups (Biddle, Coalter, et al., 2005), as discussed previously, there are a number of shortcomings of using focus groups as the most appropriate method for examining individual reasons for low PA in adolescent girls. Therefore, a more sensitive and individual approach was deemed necessary in order to fully answer the research question, which is to explore reasons for the decrease in PA from primary school to secondary school in early adolescent girls.

Over the past few years, qualitative researchers have become increasingly interested in narrative forms of inquiry (Sarbin, 1986; Polkinghorne, 1988; Bruner, 1990; Murray, 2003). Narrative is used to describe the variety of ways in which humans 'tell a story' (Bruner, 1990) and is perceived as a common and natural way of conveying experience. Previous narrative research in sport and exercise psychology has predominantly been used to explore life changing experiences for athletes (Denison, 1996; Partington, et al., 2005; Smith & Sparkes, 2008) where 'information-rich' data (Crossley, 2000) has been gathered from an individual. Through narrative the researcher is able to gain an in-depth, personalised view of the individual's experience throughout a life-changing event.

Although there is no known research within the sport and exercise literature exploring young people's narratives, Valentine (2000) advocates that children are able to create their own individual narrative. Furthermore, Gibbs (2007) suggests that adopting a narrative approach can work particularly well if the person is asked to recount their experiences of a turning point in their lives. For adolescent girls the transition from

primary school into secondary school, coupled with the transition from childhood into adolescence, qualifies as a major transitional experience. As such, adopting a narrative approach of enquiry may prove fruitful in exploring this transition and it is anticipated that through narrative the author will gain a unique insight into each individual girls' 'transition story' in relation to their PA behaviour. To date there is no known research using narrative inquiry to understand the PA behaviour of adolescent girls. Using a narrative approach guided by the quantitative findings in study one, the aim of this study is to examine the possible influence of additional variables on the decrease in PA from primary school to secondary school and to further examine the potential influence of maturation and physical self-perceptions during this transitional period.

6.2 Methods

6.2.1 Participants

A purposive sampling technique was used to recruit a selection of the girls from the overall study. Participants whose decrease in PA levels (assessed by the Physical Activity Questionnaire for Children; Crocker, et al., 1997) over the 12 months (refer to study one, Chapter 4) was above the group median were invited to participate in the study, resulting in 48 girls in total. Table 6.1 provides descriptive statistics of the 48 girls invited to participate in the study. Socio-economic status was assessed (Appendix A: Section 1, Questions 3-6) using the Family Affluence Scale (FAS) from the Health Behaviour in School aged Children survey that assesses family wealth based on responses to items on car ownership, bedroom sharing, family holidays and computer ownership (Currie, et al., 1997). A composite score of the FAS was calculated and the composite scores were divided as 0-3 (low affluence), 4 and 5 (medium affluence) and 6 and 7 (high affluence) using the FAS criteria. As a result, 23% of the girls were classified as low affluence, 40% as medium affluence, and 37% as high affluence.

Table 6.1: Mean (\pm standard deviation) scores for the physical characteristics of the study sample and sub-sample

	Study sample (N = 48)	Study sub-sample (N = 14)
Stature (m)	1.59 \pm 0.06	1.61 \pm 0.06
Body mass (kg)	50.6 \pm 9.85	51.8 \pm 11.2
Body Mass Index (kg/m²)	20.0 \pm 3.27	19.9 \pm 4.35
Waist circumference (cm)	67.1 \pm 6.55	68.7 \pm 8.89
Sum of skinfolds (mm)	79.4 \pm 29.8	84.5 \pm 39.64

The over-recruitment of participants, as suggested for qualitative research by Smith (2003), was deliberate. Due to timetabling and room availability constraints within each school and six of the girls who declined to take part in the study due to personal reasons, the participant sample was reduced to 14. Overall 14 girls participated in the study with a mean age of 13.64 ± 0.34 years. All girls and parents or guardians gave written informed consent and ethical approval was obtained for the study from the School of Life Sciences Research Ethics Committee at Heriot-Watt University. Table 6.1 provides descriptive statistics of the 14 girls who participated in the study.

6.2.2 Context of the research

The participants of the study were adolescent girls attending secondary schools which were representative of a range of socio-economic backgrounds. The participants of the study were already familiar with the researcher from research conducted over the previous 12 months, therefore a degree of trust and a level of comfort had already, to some extent, been established between the researcher and the girls. In addition to providing a description of the participants, it is common in qualitative research to describe the researcher and their research background. The researcher had an in-depth understanding of the literature examining the decrease in PA behaviour in adolescent girls yet this was drawn primarily from quantitative research. Until the commencement of this study, the researcher had had a limited understanding of qualitative research and no previous experience of collecting qualitative data.

6.2.3 Procedures

The researcher met with the girls at least two weeks prior to the interviews to introduce the study and to answer any questions. Each girl received an information sheet and parental and child consent forms and was asked to return the forms to a relevant member of staff at the school. All interviews were conducted by the

researcher and were carried out in a private room with a glass-panelled door within the school. At the onset of each interview, the participants were reminded of confidentiality and advised that they could ask to terminate the interview at any time. In addition, a brief outline of the study was given and participants were invited to ask questions about the study. All interviews were tape recorded with the participants' permission and due to the flexible nature of the process and individual responses of the participants, interviews varied in length, ranging from 10 minutes to 29 minutes.

Interview Guide

A semi-structured interview guide (Appendix B) that allowed ease of comparison across the narrative interviews whilst remaining flexible and sensitive to emergent issues was utilised. The aim of the interviews was to allow the researcher to gain an in-depth understanding of reasons for the decrease in PA in this sample of girls through a narrative approach. Although the narrative interview was merely guided by the interview schedule, the researcher acknowledged the importance of producing an interview schedule in advance. This enabled progressive thought about the different ways the interview may proceed, allowing the researcher to concentrate more thoroughly and confidently on what the participant actually said (Smith, 2003). As the study advocated a narrative approach to understanding the PA behaviours of adolescent girls, PA provided the focal point for the interview. The content of the interview guide was developed based upon knowledge of research findings in the area of PA behaviour in adolescent girls and the researcher's own experiences and findings from study one. This is similar to the procedures outlined in previous narrative research (Sparkes & Partington, 2003). As a result, the areas to be explored through narrative incorporated into the interview guide were as follows: past PA participation and experiences, self-perceptions during past PA behaviour, present PA participation and experiences, self-perceptions during present PA behaviour, and the overall experience of becoming an adolescent.

The interview guide was subsequently piloted on a sample of four adolescent girls out with the population sample of this thesis and each interview was transcribed verbatim and subsequently analysed. The use of a pilot study served several purposes. Firstly it allowed the researcher to gain experience of conducting interviews. In addition, the pilot study was used to test the comprehensibility of the questions and to establish whether responses to the interview prompts addressed the issues of interest to the

research. Finally, it provided an opportunity for the researcher to gain feedback on her interview techniques and aided the development of an appropriate framework for the analysis of the interview data. The majority of feedback was given by the researcher's PhD supervisor who had previous experience in qualitative research and analysis. The feedback involved listening to the tapes and discussing the transcripts in detail with the researcher. As a result of the feedback, the researcher was advised to use more reflective questions to clarify what was being said back to the participant and in certain areas, to explore issues in more detail. Following the piloting process, minor modifications were made to the interview guide and the researcher's interview techniques prior to their use in the present study.

At the start of the interview, it was emphasised to the participants that the researcher was interested in their own individual PA story and were invited to talk freely. Firstly the participants were asked to give their understanding of what 'PA' means to them to allow an easy introduction to the interview and for the researcher to then clarify and confirm a definition of PA for the participants. The participants were then asked to recall their PA behaviours and experiences in the last year of primary school and were invited to talk about these experiences. This open-ended question allowed the participants to explore these experiences through a narrative approach. The second part of the interview brought the participants forward in their PA narrative and they were then asked to talk about their PA behaviours and experiences in the present day. In addition, elaboration probes were used to allow the participants to expand on these experiences in relation to their self-perceptions. Finally, general probes were employed to ensure the majority of areas within the interview guide were explored without the use of leading questions.

6.2.4 Data analysis

Each interview was transcribed verbatim by the researcher (see Appendix C for an example transcript). For the initial stage of data analysis, each transcript was treated individually and read through several times. This allowed the researcher to re-familiarise herself with the material and to obtain a general idea of emerging and significant themes (Crossley, 2000) and to fully 'immerse' in the data (Sparkes & Partington, 2003). Prior to the analysis of the narratives, a case description of three of the girls was provided to allow the reader to gain further insight into the context of the girls' stories, particularly in relation to the findings of the structural analysis of their

stories. This is in line with previous narrative research in sport (Partington, et al., 2005; Smith & Sparkes, 2008). Although a narrative approach has been adopted to examine the decrease in PA in adolescent girls, there are a number of methods available within a narrative approach to analyse narrative accounts, each with its own strengths and limitations. In this study, interpretative phenomenological analysis (IPA) was used in order to identify the ‘whats’ of the stories told combined with structural analysis to focus on the ‘hows’ of the storytelling (Holstein & Gubrium, 2000).

6.2.5 Interpretive phenomenological analysis

IPA was chosen in order to maintain the focus of the analysis on the individual and their PA story. This is the central crux of the research, with the aim of a narrative approach being to produce detailed and ‘information-rich’ data (Crossley, 2000). It was hoped that by keeping the focus of the analysis on the individual’s narrative itself, the uniqueness of each story would be maintained. Smith (2003) stipulates that IPA is not a prescriptive methodology and can be adapted by researchers, predominantly at the analysis stage where the interpretative aspect is particularly relevant. Therefore, emerging themes and ideas were built up from each transcript and guided by IPA procedures, as recommended by Smith (2003).

After each transcript was read several times, the researcher then proceeded to identify and subsequently extract ‘meaning units’ within the transcript. Graneheim and Lundman’s (2004) definition of a meaning unit is, “words, sentences or paragraphs containing aspects related to each other through their content and context” (p. 106). Guided by this, a meaning unit was defined as, ‘words or phrases that can be identified as having one meaning’. In order to facilitate understanding of the main research question as to the decrease in PA in this group of girls, each meaning unit was given a meaning unit label and categorised into positive and negative aspects of the PA experience for both the past and present by the primary researcher and the researcher’s PhD supervisor. Occasionally a meaning unit was deemed to have more than one meaning, therefore was given a separate label for each of the meanings.

Following this, the researcher decided to organise the data in a way to best consider the research question which was explore the decrease in PA in adolescent girls from primary to secondary school. Therefore, subsequent data was organised into meaning

unit labels of positive aspects of past PA experiences and negative aspects of present PA experiences. The meaning unit labels were subsequently categorised into several ordered themes. There were instances where a meaning unit label was categorised into two separate themes. In such instances, this was identified in the summary table of themes for each participant.

The final stage of the analysis was to identify common themes across all of the participants and a final table of themes was constructed detailing positive aspects of PA experiences in the past and negative aspects of PA experiences in the present. The overall process of the analysis is shown in Figure 6.1.

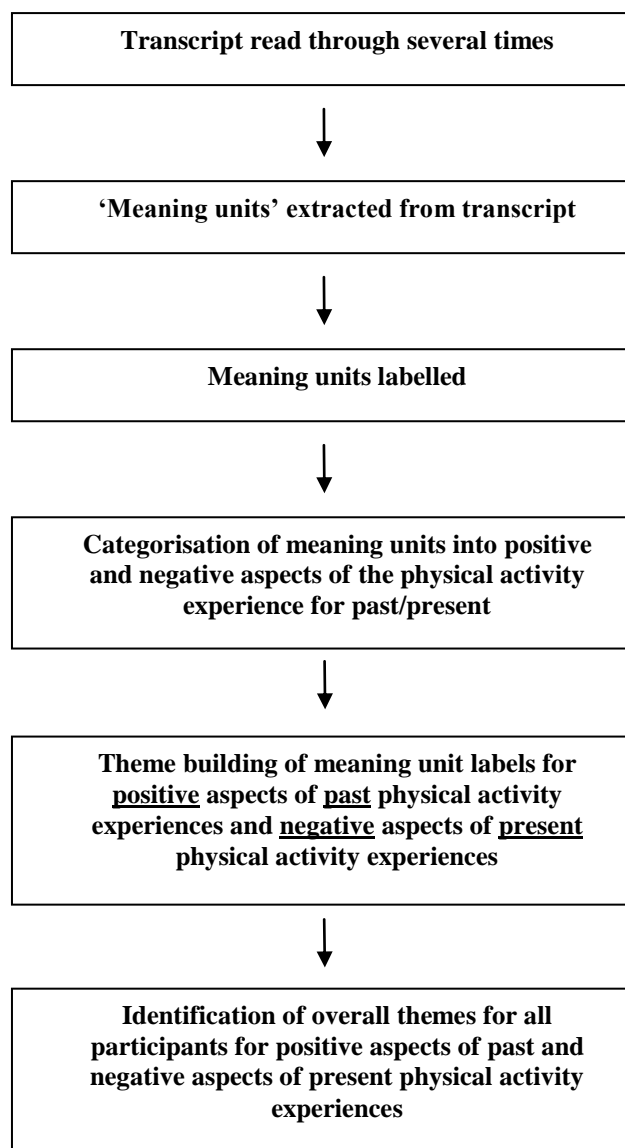


Figure 6.1: Flow diagram highlighting each stage of the interpretative phenomenological analysis

6.2.6 Structural analysis

Following the IPA used to identify the ‘whats’ of the girls’ PA stories, the transcripts were subsequently subjected to a more holistic form of analysis (Lieblich, et al., 1998) in order to focus on ‘how’ the girls told their PA stories. As noted by Sparkes and Partington (2003), the assumption behind this type of analysis is that the formal aspects of structure, just as much as the actual content, shape the telling of the story and are also an expression of the identity, perception and values of the narrator and the cultural group to which the individual belongs. Therefore, the ‘hows’ of the storytelling are equally as important to addressing the research question as the ‘whats’ of the story (Holstein & Gubrium, 2000) and can be viewed as complementary rather than mutually exclusive. Considered together they can assist our understanding of the relationship between form and content in the complex process of storytelling (Sparkes & Partington, 2003). Although not directly related to the structure of narratives, logistics of narrative research relating to narrative control and narrative ownership are commonly acknowledged in narrative research (Gubrium & Holstein, 1998). Therefore, logistics of the girls’ narratives relating to narrative control and narrative ownership were discussed. Subsequently, in order to examine elements of narrative type; narrative tone; narrative silence; narrative characters and narrative culture, each transcript was read through several times and instances of such elements were highlighted. A comparison of all of the transcripts on these elements was made and subsequently three particular transcripts were isolated to best illustrate differences in these elements to be discussed further in the findings.

Narrative control has been defined by Gubrium and Holstein (1998) as, “features of narrative practice that are formally designated or constrained” (p. 173). Essentially, narrative control refers to the extent a narrative is controlled or influenced by others or external factors, rather than the storyteller themselves. In an interview, the schedule and protocol dictate that the interviewer does the asking while the participant provides the story. In addition, the environment the story is told in may also influence the narrative elicited. As such, complete narrative control does not reside with the participant themselves. Guided by a detailed discussion on narrative control by Gubrium and Holstein (1998), an examination of narrative control in the girls’ PA stories took place.

Typically the personal story is believed to belong to whoever tells the story. However, similar to narrative control, the interviewer partly owns the story that is being told through dictating the content of the story from the outset when the narrative topic is introduced. Consequently, narrative ownership (Gubrium & Holstein, 1998) was also discussed in relation to the narratives of the girls.

Gubrium and Holstein (1998) outlined that whilst several individuals may tell a story that is characteristic of a particular type of narrative, there will be unique elements that make the story personal and it is unlikely that all individual stories will conform to a narrative type exactly. Guided by previous research on narrative types (Partington, et al., 2005), the girls' narratives were examined further to determine the existence of specific types of narrative.

Murray (2008) describes the tone of a narrative as the “overall emotional flavour of the narrative” (p. 122) and according to Crossley (2000), narrative tone is perhaps the most pervasive feature of a personal narrative which is conveyed in both structure and context of a story. Guided by the work of Crossley (2000), the narrative tone of the stories was explored. Instances of narrative silence were examined across the narratives, guided by previous research on the narrative silences of male members of a canoe club in relation to the health and safety risks of their sport (Sparkes & Partington, 2003). According to Smith and Sparkes (2009a), an individual's own story is shaped, facilitated and constrained by narratives that circulate within the culture in which they are immersed, allowing the narrative researcher to move beyond an individualistic focus to a more complex exploration of people as both social and individual beings. In addition, although the narrator tells their story, the characters the narrator chooses to introduce into the narrative will depend on whom the story is being told to, the relationship between the narrator and the audience and the broader social and cultural context (Murray, 1997). Therefore, an examination of both the narrative characters and the narrative culture that emerged from the girls' narratives was also undertaken.

6.2.7 Quality of the analysis

It is acknowledged that due to the interpretive and subjective nature of qualitative research, the subjectivities of the researcher and those of the participants become part of the research process. In essence, the researcher's reactions, observations, thoughts

and opinions are unavoidably embedded in the collection and analysis of the data (Yardley, 2000). Although this type of researcher-bias cannot be avoided, the researcher acknowledges it and taking steps to ensure the quality of the analysis was an integral part of the research procedure.

The use of concepts for ensuring quality of analysis differs between the qualitative and quantitative research traditions (Graneheim & Lundman, 2004). Although clear criteria for judging the rigor of quantitative research is well-established through reliability and validity (Hardy, et al., 1996), in 1985, Guba and Lincoln substituted reliability and validity in qualitative research with the concept of ‘trustworthiness’. According to Lincoln and Guba (1985), qualitative research should be judged on the basis of the concept of trustworthiness which comprises of four aspects: credibility, transferability, dependability and confirmability. Furthermore, Lincoln and Guba (1985) identified a number of techniques that could be used to establish trustworthiness in qualitative research. Based on the work of Lincoln and Guba (1985), more recent guidelines for assessing the quality of qualitative research have been developed (Patton, 1990; Elliott, et al., 1999; Yardley, 2000). Guided by the techniques outlined by Lincoln and Guba (1985) and more recent research, several methods were used to warrant trustworthiness in the research procedures.

Credibility

Lincoln and Guba (1985) stipulate that establishing credibility is a two-fold task: to carry out the research in a manner so that the probability that the findings will be found credible is enhanced and to demonstrate that the findings match the constructed realities of the participants themselves. To increase the credibility of the research, the researcher consulted with her PhD supervisor on a regular basis to assess the inter-rater reliability of categorisation of themes for all of the transcripts. This involved independent categorisation of meaning units and meaning unit labels of each transcript; independent categorisation of meaning unit labels into positive and negative aspects of the PA experience for past/present and independent categorisation of meaning unit labels into ordered themes. Therefore, at each stage of the analysis (refer to Figure 6.1), the primary researcher and her supervisor independently categorised meaning units, meaning unit labels and themes. Independent categorisation was then discussed for each transcript with inter-rater agreement ranging between 66% and 92% for each transcript. In instances where disagreements

on any of the categorisation occurred, discussion continued until full inter-rater agreement was reached. In addition to the categorisation of themes, this process assisted the primary researcher in exploring and critically questioning her decisions during the analytic process (Lincoln & Guba, 1985).

In addition, a technique known as peer debriefing (Lincoln & Guba, 1985) was used to further enhance credibility. In this instance, the disinterested peer was the researcher's secondary PhD supervisor who had no prior input or knowledge regarding the analysis process yet was knowledgeable about the topic of interest. This consultation was conducted at the half way point in the analysis process and served several purposes. Firstly, it provided an opportunity for the researcher to critically question her research decisions and subsequently allowed for reflection on future research decisions. It was also an avenue for catharsis, thereby clearing the mind of thoughts that may have been clouding good judgement or preventing sensible and coherent thoughts for the next stage of the analysis process (Lincoln & Guba, 1985). Finally, the process of peer debriefing increased the researcher's confidence in her data analysis and categorisation of themes.

Transferability

Transferability refers to whether the findings of a study can be transferred to other settings (Lincoln & Guba, 1985). In order to ensure transferability, Patton (1990) suggests that a thick description of the context of the study should be provided to allow the reader to reach their own conclusions as to whether transfer of findings is feasible. In this study, the researcher has taken steps to provide the reader with adequate detail on both the participants and the researcher in the methods section, to allow the reader to ascertain whether the findings can be transferred to their specific research context.

Dependability

Lincoln and Guba (1985) use the term 'dependability' as a substitute for the positivistic term reliability. Dependability accounts for factors of instability and changes in design and methods, which is cited as an essential part of the process of phenomenological approaches (Anderson, Knowles & Gilbourne, 2004). In order to address dependability, a reflexive diary (Lincoln & Guba, 1985) was used where the researcher kept a daily record of the research experience in relation to personal reflections and methodological decisions made, which could be referred back to

throughout the research experience. For example, certain ‘meaning units’ were deemed to have more than one meaning and therefore the diary was used to record these and use for future reference when necessary.

Confirmability

Finally, confirmability is concerned with demonstrating that the findings are rooted in the data and not just a figment of the researcher’s imagination (Lincoln & Guba, 1985). In order to demonstrate confirmability the researcher adopted a constant-checking approach whereby at each stage of the analysis, referral back to the original transcripts was employed to ensure all subsequent thematic connections were appropriate. Therefore, all general themes could be tracked back through the ordered themes and then through subsequent ‘meaning units’ generated from the original transcript. In addition, examples and quotations from the original transcripts were used throughout the presentation of the findings to demonstrate that the findings did emerge from the data and enhance confirmability.

6.3 Results

Prior to discussing the findings of the IPA and structural analysis, a case description of three of the girls (Carol, Rebecca and Judith) is given to provide the reader with a sense of context and background to each girl and their narrative, in line with previous narrative research (Partington et al., 2005; Smith & Sparkes, 2008).

Case Description - Carol

Carol is white, aged 13.6 years old, and can be categorised in the medium affluence group in relation to socio-economic status. In relation to her physical description, Carol is 1.70m tall with a body mass of 68kg, with a Body Mass Index (BMI) of 16.71 which is considerably lower than the mean value of the sample (see Table 6.1). Initially at the start of her story Carol found it difficult to recall her PA behaviour at primary school, particularly the activities participated in during PE lessons. However she was enthusiastic about the activities she did during school camp (e.g. abseiling, kayaking) and enjoyed the active games they did during PE lessons, for example rounders. Carol also recalled that in the last year at primary school she started playing badminton with her parents in the evenings and subsequently she joined a badminton club. Participation in the badminton club appeared to be important to Carol as this was consistently referred to throughout her story. Carol continued with the badminton

club whilst at secondary school yet she said she doesn't go with friends to the club on a Tuesday evening but once there she preferred playing doubles rather than singles.

The majority of Carol's story related to her time at secondary school and she discussed her PE lessons at length and in great detail. She commented that she felt there was more choice in the activities offered in PE lessons at secondary school yet swimming was the only activity she enjoyed. The main reason Carol cited for enjoying swimming in comparison to other activities was she felt competent and confident in her ability to swim. However, Carol did comment that she didn't enjoy doing any activity in the presence of boys due to their competitive nature, including swimming. In her discussion of her PA out of school, Carol stated that she didn't do much apart from badminton club on a Tuesday evening and if she did it would be with her family at the weekends. Finally, throughout her story Carol emphasised that if she enjoyed an activity she doesn't mind doing it alone and doesn't necessarily need to participate with her friends.

Case Description – Rebecca

Rebecca is white, aged 13.8 years old and can be categorised in the high affluence group in relation to socio-economic status. In relation to her physical description, Rebecca is 1.64m tall with a body mass of 50kg, with a BMI of 18.7 which is lower than the mean value of the sample (see Table 6.1). In her recollection of PA at primary school, Rebecca stated that the activities in PE during the last year involved skipping or gymnastics when inside for PE and running around the field when outside. When recalling her PA behaviour outside of school in the past, Rebecca said that she went swimming lots with her dad and her sister at the weekends which she enjoyed.

For Rebecca, the majority of her story focused around dancing. Rebecca started dancing when she was three years old and although she continued with it throughout primary school, it wasn't until she was at secondary school did she start taking it seriously. Dancing is now her main priority which she describes with passion and enthusiasm in her PA story. Her involvement in dancing is not related to a school club therefore she participates in no additional activities after school, during evenings or weekends. When talking about her PE lessons, Rebecca stated that she felt there was more choice in the activities available at secondary school and that in general she enjoyed participating in PA in PE. Rebecca also stated that she felt confident in PE lessons at secondary school, even doing activity in front of her peers and in the

presence of boys. Finally, Rebecca's mum seemed to be an important influence on her dancing and PA behaviour as she repeatedly discussed how her mum encourages her dancing and often does PA with her in the form of exercise videos at home.

Case Description – Judith

Judith is white, aged 14.1 years old and can be categorised in the medium affluence group in relation to socio-economic status. In relation to her physical description, Judith is 1.59m tall with a body mass of 55kg, with a BMI of 21.2 which are above the mean value of the sample (see Table 6.1). At the start of her story, Judith describes how she was really active at primary school, involved in the basketball, swimming and athletics teams. She also actively recalled her enjoyment in being part of these teams through feeling competent and the sense of achievement gained when she finished a length at swimming or scored in basketball. During her PE lessons at primary school Judith said she didn't mind working with boys as they were seen as just friends and she had known them for ages. Judith also recalled going swimming at weekends with her dad and playing tennis every Monday evening with her friend Megan.

Judith's story changed when she started discussing her PA behaviour at secondary school commenting on how she doesn't do sport anymore and that she has given up trying. When talking about her PE lessons, she stated that she hates swimming in the presence of boys because of concerns about revealing her body. Judith openly discusses changes to her body since primary school saying she has put on weight on her belly and her legs. In addition, Judith says she wants to lose weight and tone up yet can't be bothered doing any activity to achieve this goal. In her discussion of PE lessons, Judith also stated that she hates gymnastics because she feels she lacks competence compared to her peers. Throughout her PA story, Judith's friend Megan appears to be an important influence on her PA behaviour as she openly admits that she wouldn't do any activity unless Megan was doing it. In addition, at weekends, Judith spends time with her friends doing other activities (e.g. shopping, watching movies). Finally, although Judith admits that her family is very active, she stated she prefers doing art, watching television or spending time on the computer.

6.3.1 Interpretive phenomenological analysis

Through the narrative interviews, data were collected relating to both the positive and negative aspects of both past and present PA experiences. However, the researcher decided that in order to best examine the research question, exploring the decrease in PA in adolescent girls from primary to secondary school, further analysis of negative aspects of past PA experiences and positive aspects of present PA experiences was not continued and is not presented in the results section. The researcher acknowledges that this does provide the reader with a biased positive view of past PA experiences and a biased negative view of present PA experiences of the girls yet it was deemed the most appropriate method available to handle the large volume of data collected during the narrative interviews and to focus on the study research question. In order to ensure that the negative aspects of present PA experiences were not the same as those encountered in the past, the researcher cross-checked all meaning-unit labels. Of the 518 meaning unit labels relating to negative aspects of present PA experiences, 21 of these were evident in past PA experiences. Therefore, the researcher deemed that the negative aspects of present PA experiences were predominantly encountered in the present only and all were included in the subsequent presentation of the findings.

In line with the idiographic nature of IPA, analysis of the narrative interview data resulted in the identification of meaning unit labels and subsequent ordered themes relating to positive aspects of past PA and negative aspects of present PA for each participant, as shown in the example in Tables 6.2 and 6.3. Summary tables for the remainder of the participants are presented in Appendix D. Overall five themes relating to positive aspects of past PA experiences and nine themes relating to negative aspects of present PA experiences were identified for all 14 participants. The five themes relating to positive aspects of past PA experiences were labeled: Utilised Opportunities to be Active, Sustained Interest in Physical Activity, Supportive Physical Activity Environment, Positive Sense of Self when Active, and Physical Health Facilitators. The nine themes relating to negative aspects of present PA experiences were labeled: Lack of Utilising Opportunities to be Active, Alternative Activities to being Active, Unsupportive Physical Activity Environment, Negative Sense of Self when Active, Physical Health Barriers, Alternative Priorities, Lack of Knowledge, Lack of Time, and Lack of Organisation of Activities.

Table 6.2: Summary table of ordered themes relating to positive aspects of past physical activity experiences for Cherith

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Netball in PE	Activities in PE	→	→	Utilised opportunities to be active
Football in PE				
Gymnastics in PE				
Active games at break/lunch time	Activities at break/lunch times	→	→	
Netball after-school	Extra-curricular activities	→	→	
Played games after-school				
Dodgeball after-school				
Rounders after-school				
Football after-school				
Swimming after-school				
Swimming with mum and brother	Activities out of school	→	→	
Rock-climbing at weekends	Opportunity for PA	→	→	
Outside at break/lunch time				
Involvement of friends in PA	Peer involvement	Peer support	Social support	Supportive PA environment
Social group enjoyment of PA				
Swimming with mum and brother	Family involvement in PA	Family support		
Enjoyment	Enjoyment	Enjoyment	→	Positive sense of self when active
Increased interest in PA	Interest in PA			
Enjoyment of non-competitive aspect of PA	Enjoyed non-competitive aspect			
Social group enjoyment of PA	Enjoyed social aspect			
Used to enjoy doing lots of sports	Enjoyed lots of sports			
Importance of enjoyment over competence	Enjoyment important			
Perceived competence/ability	→	Competence	→	
Sense of achievement/mastery	→			
Taught skills in PE	→			
Increased energy levels	Increased energy	→	→	Physical health facilitators

Table 6.3: Summary table of ordered themes relating to negative aspects of present physical activity experiences for Cherith

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Change in peer PA preferences	Social influence	Lack of peer support	Lack of social support	Unsupportive PA environment
Friends didn't want to do netball	Lack of peer support			
Parents concerned about safety when doing PA**	Safety concerns of parents	Lack of family support		
Lack of family involvement in PA	Lack of family PA			
Other family PA commitments taking priority	Impact of family dynamics on PA			
Parents' work/travel constraints on extra-curricular activities				
Difficult for family to all go swimming together				
Unfamiliar social group doing netball	Unfamiliar social environment for PA	Unsupportive social environment for PA		
Dislike of others doing netball	Uncomfortable PA environment			
Too cold to go jogging	Negative influence of weather on PA	Physical environment barriers		
Dangerous where she lives	Safety issues with PA environment			
Parents concerned about safety when doing PA**				
<u>Just</u> does rock-climbing	Lack of extra-curricular activities	→	→	Lack of utilising opportunities to be active
Illness/health problems affecting PA participation	Illness/health barriers to PA	→	→	Physical health barriers
Not that energetic	Lack of energy	→	→	
Lack of energy				
Negative physical self-comparison compared to peers	Body concerns	→	→	Negative sense of self when active

In order to explore the decrease in PA in adolescent girls from primary school to secondary school, it was decided that providing the reader with what the girls experienced in the past in primary school compared to what the girls are lacking in the present in secondary school for each theme was the most effective way of addressing the research question. Therefore, a discussion of these overall themes will be presented in this section relating to the four following dimensions: Physical Activity Opportunities; The Environment; Sense of Self when Active and Individual Issues, where an examination of both the positive aspects of the past followed by the negative aspects of the present will be described. These dimensions adequately capture the five themes relating to positive aspects of past PA experiences and the nine themes relating to negative aspects of present PA experiences. Tables 6.4 and 6.5 outline each of these themes and the corresponding number of participants for whom this theme was prevalent in their narrative and the overall dimension.

Table 6.4: Overall narrative themes and dimensions relating to positive aspects of past physical activity experiences and number of participants for whom the theme was evident in their narrative

Overall theme	Number of participants	Dimension
Utilised Opportunities to be Active	14	Physical Activity Opportunities
Sustained interest in Physical Activity	4	
Supportive Physical Activity Environment	14	Environment
Positive Sense of Self when Active	14	Sense of Self when Active
Physical Health Facilitators	1	Individual Issues

Table 6.5: Overall narrative themes and dimensions relating to negative aspects of present physical activity experiences and number of participants for whom the theme was evident in their narrative

Overall theme	Number of participants	Dimension
Lack of Utilising Opportunities to be Active	13	Physical Activity Opportunities
Alternatives to being Active	6	
Unsupportive Physical Activity Environment	10	Environment
Negative Sense of Self when Active	12	Sense of Self when Active
Physical Health Barriers	5	Individual Issues
Lack of Knowledge	3	
Alternative Priorities	3	
Lack of Organisation of Activities	1	
Lack of Time	2	

Due to lack of space, the presentation and subsequent discussion of all 419 meaning-unit labels relating to positive aspects of PA experiences and 219 meaning-unit labels relating to negative aspects of PA experiences is not presented in the results section. Overall themes are summarised in Tables 6.6 - 6.13 and described below, using quotations and examples to illustrate themes at the meaning unit level. It should also be noted that where the meaning-unit label and/or lower order themes are carried directly through to a higher order theme it is indicated in Tables 6.6 - 6.13 by an arrow. To aid engagement of the reader with what the girls said, it was decided that all quotations and examples from the narrative were to be displayed as a freestanding block of typewritten lines in the results section regardless of the length of the quotation. Also, in certain instances where the meaning-unit quotation requires additional information to add clarity for the reader, this is included in italics using parentheses. In order to engage the reader with the narratives of the girls and for confidentiality purposes, all participants were assigned pseudonyms in the discussion of the results.

6.3.2 Physical Activity Opportunities

Utilised Opportunities to be Active (past at primary school)

An examination of the positive aspects of the past PA experiences of the girls resulted in the identification of nine first-order themes relating to the overall theme of Utilised Opportunities to be Active (Table 6.6), which is defined as utilisation of all available opportunities for PA both in school and out of school.

Table 6.6: First-order themes comprising the overall themes of Utilised Opportunities to be Active and Sustained Interest in Physical Activity in relation to positive aspects of past physical activity opportunities

First-order themes	Overall theme
Active travel to/from school	Utilised Opportunities to be Active
Activities at break/lunch times	
Activities in PE	
Active at primary school	
Extra-curricular activities	
Activities at school camp	
School competitions	
Activities out of school	
Aware of opportunities for PA participation	
<hr/>	
Sustained interest in dancing	Sustained Interest in PA
Sustained interest in running	
Sustained interest in swimming	
Sustained interest in dancing	

Active travel to/from primary school in the form of walking was evident for a number of the girls, as stated by Claire in her narrative:

‘Erm, I walked to school every day and back’

Break and lunch time in primary school was often utilised as an opportunity to be active. The types of activities the girls participated in ranged from unstructured play through active games, such as tig and 'hidey' to more structured forms of PA by playing football. As vocalised by Sarah, a number of the girls were continuously active at break and lunch time in primary school through a variety of ways:

'Errr well again we were playing games like errr, hide and seek or something or just like running around or even that we were just walking everywhere so....we were always doing something at break time'

Physical Education (PE) lessons in primary school provided an opportunity for the girls to be active in various forms. Activities participated in ranged from more traditional activities, for example football, netball and gymnastics to more game-related activities, for example dodgeball and rounders. In addition to the activities in PE, a number of girls felt they generally ran about a lot in primary school, as expressed by two of the girls:

'And we just done stuff in the class room, you just ran around sometimes....that's what I done the most, stuff like that' (Joan)

'and just, that was it really just mucking about running about the place....yeah'
(Michelle)

The opportunity to participate in extra-curricular activities at primary school was used by all the girls and similar to activities in PE, these ranged from more traditional activities, for example basketball and swimming to more game-related activities, for example dodgeball and rounders. Furthermore, a number of girls chose to participate in more than one extra-curricular activity, for example Cherith had the opportunity to participate in a variety of activities through an after-school club, as did Judith through being a member of the school teams:

'And in RASCA, that's after school care, sometimes we either went outside if it was really hot in the summer and played like dodgeball or something or if it was cold to go into the hall and just play like team games, rounders or football or something' (Cherith)

‘I used to be in the basketball team and I used to be in the athletics team’ (Judith)

Carol also recalled the activities she took part in on a school camp in primary school, which gave her the opportunity to try outdoor activities in the form of kayaking and abseiling. Rebecca also commented on the opportunity of taking part in inter-scholastic competitions at primary school. In addition to the extra-curricular opportunities available within the school environment, the majority of girls also chose to participate in activities out of school. As well as the more traditional activities participated in such as tennis and badminton, the girls participated in horse-riding, dancing, rock-climbing and judo. However for Carol, although she chose not to participate in cross-country she was aware of the opportunity available in her primary school, as illustrated below:

‘Well some people done cross-country outside of school but like with the school’

Sustained Physical Activity (past at primary school)

An examination of the positive aspects of past PA experiences of the girls resulted in four first-order themes relating to the overall theme of Sustained Physical Activity (Table 6.6), which is defined as participation in a specific PA over a sustained period of time. This theme was evident in four of the girls whose interest and participation in their activity had been sustained for a number of years. This is highlighted in the following extracts from their narrative interviews:

‘Well, dancing, I’ve been doing that since I was....I think I was one and a half so I’ve just been doing that for practically my whole life’ (Sophie)

‘Erm....I liked running cos I started doing it when I was quite small cos my dad was quite a good runner so I’ve just always done it’ (Louise)

‘Erm I started swimming lessons in pre-school erm and then I joined the club in primary 3 when I finished the lessons’ (Angela)

‘Erm I started at a very young age....I like dancing because I started when I was three’ (Rebecca)

Lack of Utilising Opportunities to be Active (present at secondary school)

An examination of the negative aspects of present PA experiences of the girls resulted in the identification of nine first-order themes relating to the overall theme of Lack of

Utilising Opportunities to be Active (Table 6.7), which is defined as a lack of utilisation of all the available opportunities for PA both in school and out of school.

Table 6.7: First-order themes comprising the overall themes of Lack of Utilising Opportunities to be Active and Alternative Activities to being Active in relation to negative aspects of present physical activity opportunities

First-order themes	Overall theme
Lack of PA in secondary school	Lack of Utilising Opportunities to be Active
Lack of PA compared to primary school	
Didn't choose to do PE	
Lack of PA except PE	
Lack of activity at break/lunch	
Lack of extra-curricular activities	
Lack of PA out of school	
Lack of weekend PA	
Unsure as to why not active	
Preference for alternative activities	Alternative Activities to being Active
Alternative activities at weekends	

Firstly, when talking about their present PA behaviour, a number of girls openly admitted their lack of activity at secondary school, even compared to primary school:

‘I don't do any sport at all anymore, I've gave up on it’ (Judith)

‘I dunno what it is but I just feel different like I'm not as active as what I was in primary’ (Sam)

Although a PE core lesson of at least two hours of quality PE per week is advised in Scottish secondary schools, a number of the girls stated that they had not chosen PE as a subject option at secondary school, indicating that they were not utilising this as an opportunity to be active. In addition to this, Claire admitted that the only activity she did was in her PE lessons:

‘Besides PE I don't do that much, I don't do any clubs or anything like that’

For the majority of girls, the opportunity to be active at break and lunch times in secondary school was not used. When recalling the types of activity participated in at break and lunch, common responses of the girls were:

‘Erm well I don’t do that much cos I stay inside and I hang about like upstairs so we just kind of sit about talking so I don’t do that much’ (Claire)

‘Erm probably, well I do walk around a bit but I probably just, I just talk to people....mostly’ (Carol)

There were also girls who commented on their lack of extra-curricular and out of school activities in secondary school, for example Claire stated:

‘Like after school and stuff like that I don’t do any clubs’

Additionally, some of the girls commented on their lack of PA at weekends:

‘I don’t really do a lot at the weekends, physical activity’ (Carol)

Alternative activities to being Active (present at secondary school)

The overall theme of Alternatives to being Active is defined as any activity which is an alternative to participating in PA and comprised of two first-order themes (Table 6.7). Judith openly admitted in her narrative a clear preference for alternative activities to being active, as highlighted in the extract below:

‘I don’t do stuff like that, activity, at the weekends, I just go out with my friends, we go to the Gyle (*shopping centre*) and we go up town just we hang about at each others’ houses, watch movies, computer, food....just not, we don’t do any exercise’

Through examination of the overall theme of Alternatives to being Active, it is apparent that a few of the girls frequently chose alternative activities at the weekends to being active. Examples of these activities include going shopping, meeting up with friends and going to the cinema.

6.3.3 Environment

Supportive Physical Activity Environment (past at primary school)

A Supportive Physical Activity Environment is defined as all aspects of the environment which is supportive of PA participation. The overall theme of having a Supportive Physical Activity Environment was evident for all 14 of the girls in relation to the positive aspects of their past PA experiences. This overall theme consisted of one third-order theme and ten second-order themes (Table 6.8).

Table 6.8: Second- and third-order themes comprising the overall theme of Supportive Physical Activity Environment in relation to positive aspects of past physical activity environment

Second-order themes	Third-order themes	Overall theme
Peer support	Social support	Supportive PA Environment
Family support		
Leader support		
Support of dance teacher		
Supportive social environment	→	
Comfortable in PA environment	→	
Girls-only environment	→	
Physical environment facilitators	→	
Supportive PE environment	→	
Incentives to be active/stay active	→	

Social support

Social support was an important contributor to having an overall supportive PA environment. Social support was predominantly provided by peers and family; however there were several girls who recalled having the support of others, for example activity leaders and specialist teachers. Peer support was in the form of the

involvement of friends and peers in their PA participation. This was evident in the majority of girls' narratives, as illustrated by three of the girls:

'Erm, me and my friends used to go to the gym at Drumbrae on a Sunday morning and swimming' (Cherith)

'Yeah a couple of my friends did it (*dancing*)' (Joan)

'I was more interested in doing sports then cos I was with, with all my friends' (Angela)

Family support consisted of family involvement in PA, PA competence shown by family members and overall support for the girls' PA participation. Through a more detailed examination of the second-order theme of family support, it is apparent that the level of family support and which family member(s) are providing the support varies between participants. For Cherith, several family members were involved in her PA participation, as illustrated below:

'My brother had swimming lessons in Bubbles at Livingston, so my mum and I would go to the other pool and just swim around until his lesson had finished'

Similarly, for Judith, there was evidence of both family involvement and family support in her PA participation:

'My dad would take me swimming on Sundays, we'd go swimming together.... and I used to go to play tennis with Megan and mum would take us up to (*tennis*)'.

In addition to the peer and family support, a few of the girls commented on significant others throughout their narrative who provided social support. For example, for Sophie, the positive relationship she had with her dance teacher led to a supportive PA environment for her:

'My dance teacher is really close to my family so, like she's practically my aunty so I really wanted to go to see her'

Finally, for some girls having a smaller social group at primary school facilitated an overall supportive PA environment, as described by Sam when she was asked why she felt confident doing PA in primary school:

‘Cos I was around not as much people as I am at high school’

Comfortable in physical activity environment

There were a number of first-order themes that contributed to the girls being comfortable in their PA environment at primary school and although not all of these were evident in each girls’ PA narrative, for a number of the girls, the sense of familiarity when participating in PA in primary school was an important contributor to a supportive PA environment:

‘In primary class cos I’d been with them for seven years then I like knew them better so I wasn’t really self-conscious or anything with them’ (Sophie)

‘Erm...I’m not like as confident (*doing PA*) as in primary like you grew up with them people like from primary one’ (Joan)

There were a number of instances whereby only one girl commented on aspects of being comfortable in their physical environment, which were not common across all participants. For example, feeling comfortable in the presence of boys when participating in PA was evident for Judith:

‘In primary school, we used to have boys in our class and nobody cared cos they were just our friends and stuff’.

Working with peers of a similar ability in PE was an important aspect to being comfortable in her PA environment for Carol:

‘So we just sort of, well there was people in primary school that I just used to sort of like stay with when we were doing PE because they were like the same as me’

Girls-only environment

For a number of the girls, having a girls-only environment for certain activities was central to a supportive PA environment in the past. This is highlighted by the following extracts:

‘No it was an all girls one (*football team*) cos errr the boys and the girls teams didn’t really like doing it together cos they found that none of the girls went in, even in the mixed team because the boys were there, they all went into a girls team instead so they did it like that’ (Louise)

‘It was a girls (*football*) club and I just thought...like with the boys you weren’t quite as good but then with the girls you were like better because you were against your own strength....so I felt better’ (Michelle)

Physical environment facilitators

The contribution of the physical environment to a supportive PA environment was articulated in the majority of the girls’ narratives in various forms. Firstly, the use of local facilities to be active was evident, as illustrated by Debbie:

‘It was at Meadowbank (*local sports centre*) on a Monday’

In addition, a few of the girls used the local environment to be active:

‘Erm sometimes I’d go out (*walking*) with my mum or my friends, sometimes we’d go up Arthur’s seat’ (Debbie)

‘Usually (*bike*) a bit along the canal’ (Sam)

Surroundings conducive to PA participation also contributed to an overall supportive PA environment for Louise when she recalled her PA at primary school and for Rebecca when commenting on the weather and PA:

‘Oh some tennis, some football and some hockey as well outside cos we had the tarmac which we used to go out on and do’ (Louise)

‘We would go out running in the fields if it was a nice day’ (Rebecca)

Supportive PE environment

The provision of a supportive PE environment was also important in some of the girls’ narrative in relation to an overall supportive PA environment. The provision of both specialist teachers and equipment in primary school was highlighted by Carol:

‘Well once I think there was a group that came in and did tennis with us for a while....cos I think when we did tennis, the people who were doing it like brought the stuff’

Although not evident across all the participants, from the context of her comment it was apparent that Rebecca liked the fact that PE lessons weren’t strict in primary school and this resulted in a positive environment in PE for her:

‘I dunno it (*PE*) wasn’t very strict’

Incentives to be active

Finally, when talking about an after-school club in primary school, Sarah recalled:

‘They (*activity leaders*) would just do lots of stuff with you and you’d win things if you kept taking part’.

Therefore demonstrating how providing incentives to be active/stay active was a contributor to a supportive PA environment for her.

Unsupportive Physical Activity Environment (present at secondary school)

The overall theme of having an Unsupportive Physical Activity Environment was evident for ten of the girls in relation to negative aspects of their present PA experiences, and is defined as all aspects of the environment which are unsupportive of PA participation. This overall theme was the largest of all the themes identified in the girls’ narratives, consisting of ten second-order themes and one third-order theme (Table 6.9).

Table 6.9: Second- and third-order themes comprising the overall theme of Unsupportive Physical Activity Environment in relation to negative aspects of present physical activity environment

Second-order themes	Third-order themes	Overall theme
Lack of peer support	Lack of social support	Unsupportive PA environment
Lack of family support		
Unsupportive social environment for PA		
Uncomfortable in competent PA environment	→	
Uncomfortable in PA environment with boys	→	
Uncomfortable in PE environment	→	
Unsupportive PE environment	→	
Physical environment barriers	→	
Being active at break/lunch not part of school culture	→	
Lack of resources	→	

Lack of Social Support

A lack of social support was a significant contributor to an overall unsupportive PA environment, consisting of a lack of peer support, a lack of family support and an unsupportive social environment for PA. A number of the girls mentioned the lack of friend/peer involvement in their PA participation, for example, when recalling the reasons for giving up netball in secondary school, Cherith stated that:

‘Like none of my friends wanted to do netball’

Similarly, having a friend to do PA with was important to a number of girls, as illustrated by Judith’s comment:

‘I went and said do you want to go to dance on, on a Friday after school and she said no I don’t wanna do it so then I don’t wanna do it if no one else is going. I like dancing if like all the rest of my friends went....I would never go by myself’

Lack of friend/peer interest in PA was also a contributor to a feeling of lack of peer support for a couple of the girls:

‘My friends aren’t very sporty either’ (Claire)

‘I know some of my friends probably don’t like it (football in PE) much either’ (Carol)

In addition to lack of peer interest in PA, a change in social influence through the transition into a new social environment in secondary school possibly contributed to a lack of peer support for PA, particularly for Judith:

‘Like I used to really enjoy doing it and then when I got to high school I just, sort of changed and I just didn’t enjoy it any more....but I don’t know whether that’s because we met new people, different people in our class that, I don’t know I just stopped liking it’

Although not evident in as many of the girls’ narrative, for some a lack of family support for PA was an important contributor to overall lack of social support. Lack of family support consisted of two main forms: lack of family involvement in PA and the impact of family dynamics and issues on PA participation. For example, Cherith talked about how attendance at any after-school clubs is now limited as her mum and dad can’t pick her up because of work commitments:

‘It’s quite hard now cos you do get after school activities but I just, I can’t do them cos of my mum and dad’s work cos I need to catch my bus and if I do stay back then my mum and dad have to leave work early to pick me up and it’s, it doesn’t really work out’

Similarly, Louise and her sister used to go horse-riding together until their mum could no longer take them because of having a baby:

‘And the horse riding because my sister stopped and my mum didn’t really want to go up to take two of us cos she just had a baby so it’s a bit harder cos it’s quite a while away so we just stop that because of those sorts of reasons’

For a couple of the girls, an unsupportive social environment contributed to a feeling of lack of social support when being active. For Sam, being in a large social group when doing PA resulted in her not feeling as confident:

‘Cos I was around not as much people as I am at high school like, don’t feel as confident at high school cos I’m around more people’.

Experiencing an unfamiliar social environment when playing netball resulted in Cherith not playing netball after-school:

‘And a lot of other people that I didn’t know and they didn’t really like me were doing it as well so that put me off (*playing netball after-school*)’

Uncomfortable in competent physical activity environment

A competent PA environment is defined as, an environment where individuals demonstrate competence in the skills necessary to participate in PA. Evidence of an unsupportive PA environment in the form of feeling uncomfortable in a competent PA environment, was apparent for a couple of the girls:

‘But erm when you do it in front of other people who are obviously like really good at sport, it’s a bit embarrassing if you don’t do it right especially if they’re like, you’re in a team with them because if you do something wrong they’ll like go mad at you for it’ (Claire)

‘Erm cos well people here, they’re either like really really sporty which I can’t really go along with’ (Carol)

Uncomfortable in physical activity environment with boys

In a large number of the narratives, the girls articulated feelings of being uncomfortable in a PA environment in the presence of boys, for example when doing PA, Claire felt:

‘In front of like boys and stuff that’s more pressure’

In particular, swimming in front of boys and a preference for an all-girls environment when swimming was apparent, as articulated by a couple of the girls:

‘It used to be all boys and we used to swim and I used to hate it’ (Judith)

‘I’m not too keen on the swimming though but I still do it cos there are some people who don’t do it at all but I’d prefer if it was all girls though’ (Gemma)

In the following extract, Carol explains how she dislikes swimming with boys because they are too competitive:

‘I didn’t really like doing it with the boys cos, cos they’re quite like competitive so they were like, when we were doing things they were like trying to go like really fast and everything like that...I dunno really, it’s just, that’s probably why I don’t like doing it with boys because they’re more competitive than girls are’

There were also examples where the girls were uncomfortable participating in other activities as well as swimming in the presence of boys, for instance, Sophie when talking about her dancing shows commented:

‘But when, if I was in front of , like the boys, doing one of my dancing shows in front of like the boys in my class I’d probably freeze and not be able to do it and forget everything just’

Uncomfortable in PE environment

As well as reporting feeling of being uncomfortable in a PA environment with boys, a number of girls expressed feelings of being uncomfortable during their PE lessons, particularly when participating in certain activities or in front of certain groups of people. For example, both Claire and Joan reported feeling uncomfortable when participating in swimming and gymnastics, predominantly because there is a focus on the individual in these activities, which is reflected in the following extracts:

‘Erm, well I’m not too keen on swimming....erm well I find it’s more like exposed like people see you it’s the whole....more like getting out there....in swimming it’s more individually and what your skills are rather than working together’ (Claire)

‘I don’t like doing like (*gymnastics*) routines or that like by myself or that’ (Joan)

Unsupportive PE environment

Indications of an unsupportive PE environment were evident in a number of the narratives. In particular, poor teaching and a general lack of teaching of skills in PE was commented on by two of the girls:

‘Just like the theory and erm like some of the things that you done like they didn’t really like teach you properly’ (Joan)

‘We just sort of, well when we’re doing badminton they just sort of let us play games but we don’t really get taught as much as we did in primary’ (Carol)

For Carol, she also felt that there was a lack of choice for her in the activities offered in PE, as illustrated below: however this feeling of lack of choice was not apparent in the narratives of the other girls:

‘Well usually there’s only like one option that I would actually want to do because the other ones are like football and basketball and I don’t really like them’

Physical environment barriers

Although only evident in one of the girls’ narratives, physical environment barriers to PA in the form of parental safety concerns and weather did lead to an unsupportive PA environment for Cherith, as illustrated in the following extract:

‘And even though you do want to go out, it’s sometimes maybe too cold to go jogging and where I live it’s quite dangerous cos all the tractors and builders come down and it’s...I would go maybe for a cycle with my, with my brother but my dad sometimes won’t let me go. My mum agrees as well because it is quite dangerous’

The physical environment barrier in the form of the distance to travel to participate in PA was also only evident in one of the girls’ narratives, with Louise explaining her reasons for not continuing with horse-riding:

‘So it’s a bit harder cos it’s quite a while away so we just stop that because of those sorts of reasons’

Being active at break/lunch time not part of school culture

Earlier findings highlighted how a lack of utilising the opportunities to be active at break time and lunch time at secondary school was evident in a number of the girls’ narratives. In addition, in a number of the narratives, the girls recollected how being active at break and lunch times was not part of their school culture, therefore creating an unsupportive PA environment. This theme is reflected in the following extracts taken from the narratives of Sarah and Gemma:

‘Cos we used to play like, ermm, hide and seek or but like more older games than that and you don’t really see much people like playing that here and I think we’ve grown out of that a bit now’

‘Cos no-one really does it like cos all the boys and that they used to play football but now none of them do so no-one really runs about or anything. More people just sit there and talk’

Lack of resources

Although only evident in one of the girls’ narratives, a lack availability of resources created an unsupportive PA environment, particularly in relation to spontaneous PA, as remarked upon by Sophie:

‘But hockey you need stuff to do it, like the hockey stick and the ball’

6.3.4 Sense of Self when Active

Positive Sense of Self when Active (past at primary school)

A Positive Sense of Self when Active is defined as an overall positive sense of well-being when engaging in PA which includes increased confidence and competence, resulting in a sense of enjoyment and interest. This overall theme was evident for all 14 of the girls in relation to positive aspects of their past PA experiences, consisting of nine second-order themes (Table 6.10) contributing to a positive sense of self when active.

Table 6.10: Second-order themes comprising the overall theme of a Positive Sense of Self when Active

Second-order themes	Overall themes
Enjoyment	Positive Sense of Self when Active
Competence	
Sees self as active	
Positive feelings from doing PA	
Lack of self-presentational concerns	
Comfortable being active alone	
Desire to participate in a specific sport	
Comfortable with self when active	
Confident	

Enjoyment

Enjoyment of PA was a key contributor to having a positive sense of self when active for the majority of the girls. In addition to general comments relating to enjoying PA and the types of activity they were participating in, enjoyment also consisted of a variety of additional first-order themes. However, due to the volume of information, the author will discuss only a selection of these which were evident in a number of the girls' narratives. Enjoyment of the social aspect when active was apparent for a number of the girls:

‘Like I like running because like you’re running beside your friends and you can chat to them and stuff’ (Rebecca)

Furthermore, Cherith referred to the group enjoyment of PE lessons in primary school:

‘And we all, we all enjoyed doing sports then’

Also evident in the narratives was the use of the term ‘fun’ when describing their past PA, for example, when referring to netball, Sam commented:

‘And I just liked doing it cos it was fun’

In addition to general comments reflecting their enjoyment when active, a number of girls referred specifically to enjoying their PE lessons in primary school, with Sarah commenting:

‘I preferred them (*PE lessons*) from all the other lessons we had’

The theme of enjoyment of PE lessons in primary school is reflected in the following extract from Sophie’s narrative:

‘I liked doing the apparatus and the assault courses and stuff like that and then when, ohhh we used to go outside and play games, like rounders and stuff on the pitch, I liked doing that’

Competence

Feelings of perceived competence and ability when active were apparent in a number of the girls’ narratives. The second-order theme of competence comprised of a variety of first-order themes including the development of competence through taught skills, for example, Debbie recalled how she enjoyed learning new skills in judo:

‘Erm like learning new stuff and like just other stuff we got to do like sometimes we’d play like games and other times like we learnt new moves and stuff’

In addition, feelings of competence through playing a positive role in the team and PA as an opportunity for the development of competence were also evident; however, these first-order themes were only specific to individuals when referring to their PA competence. Gaining a sense of achievement and mastery through PA was a first-order theme of competence which emerged in a few of the girls’ narratives, as highlighted by Cherith when recalling her feelings when rock-climbing:

‘Rock climbing I really, really enjoy doing it cos I love to just get to the top and abseil down’

See self as active

For one of the girls, Judith, she openly commented on how she saw herself as more active in primary school, contributing to a positive sense of self when active; however the second-order theme of seeing self as active was only evident in Judith's narrative.

Positive feelings when doing physical activity

Throughout their narratives, over half of the girls recounted positive feelings when doing PA. In the context of the comments made, positive feelings when doing PA was seen as a different concept to enjoyment in that, positive feelings when active suggests feeling a positive physical response to PA. This is illustrated in the following extract from Judith:

'I just enjoyed them, I don't know, I just liked the feeling of it when I was doing it, I just enjoyed like....like when we played basketball and like you scored it just felt good and then when you were just swimming you finished your lengths first it just felt good doing it....I just enjoyed it'

Similar comments were made by both Michelle when talking about playing football and Rebecca when she recalled PA participation in her PE lessons in primary school:

'I just enjoyed it.... dunno, I felt good when I did it' (Michelle)

'So you kind of felt kind of free and relaxed about it' (Rebecca)

Lack of self-presentational concerns

In a couple of narratives, an absence of self-presentational concerns when active were apparent, therefore contributing to a positive sense of self. For example, when talking about doing PA in front of her friends, Judith felt:

'When I was with the girls I didn't care (*if she couldn't do physical activity*), they were all my friends'

Comfortable being alone when active

In their narratives, a few of the girls reported feelings of being comfortable when participating in PA alone. Claire recalled walking to school alone in primary school and Michelle recollected how she was the first girl to join in playing football with the boys in primary school. The theme of being comfortable doing PA alone is reflected in the following quotation from Carol:

‘I don’t really go with any of my other friends or anything cos well when I started I wasn’t going with anybody else but I just kept doing it cos I like the sport’

Desire to participate in a specific sport

The desire to participate in a specific sport in primary school was evident in a large number of the girls’ narratives. For example, Sarah was motivated to join the primary school football club, even when there were no spaces at first:

‘Well there was already a team in primary six and I wanted to be part of that but there was a full team and then in primary seven there were spaces so I went, went for it so I did it’

The desire to participate in a specific sport is reflected in the following comments by Michelle when recalling reasons for playing hockey and tennis in primary school:

‘I dunno just....I dunno just liked the idea of it (playing hockey)’

‘Erm, I just always liked the idea of tennis’

Similarly, the desire to continue badminton by herself is highlighted in the following quotation from Carol’s narrative:

‘Erm well probably when I first started it I probably would just be playing with like my family and stuff but then erm, I wanted to go to a class to do it’

Comfortable with self when active

It was clear that a selection of the girls were comfortable with themselves when active in primary school, as reflected in their narratives. When probed on how they felt when doing PA in the past, several of the girls commented on how it wasn’t something they really thought about, as illustrated in the quotations below, which could suggest that they were comfortable with themselves when active:

‘Erm....I dunno really I just, I didn’t really think about it’ (Joan)

‘Erm, I don’t think I really thought about it back then, I don’t think I thought about it’ (Rebecca)

‘I didn’t care what anyone thought when I was in primary when I done sport’
(Judith)

Confident

For one of the girls, Sam, she openly commented on how she felt more confident in primary school because she wasn’t around as many people as in secondary school; however this second-order theme of confidence was only evident in Sam’s narrative.

Negative Sense of Self when Active (present at secondary school)

A Negative Sense of Self when Active is defined as an overall negative sense of well-being when engaging in PA which includes a lack of perceived competence, self-presentational concerns and a lack of motivation and enthusiasm. This theme was evident in the narratives of the majority of the girls in relation to negative aspects of their present PA experiences, consisting of seven second-order themes (Table 6.11) contributing to a negative sense of self when active.

Table 6.11: Second-order themes comprising the overall theme of a Negative Sense of Self when Active

Second-order themes	Overall themes
Overall lack of enjoyment/interest in PA	Negative Sense of Self when Active
Lack of enthusiasm/desire to be active	
Self-presentational concerns	
Body concerns	
Lack of competence	
Lack of confidence	
Dislike of doing PA alone	

Overall lack of enjoyment/interest in physical activity

For a large proportion of the girls, indications of a lack of enjoyment and interest in PA were present in their narratives. For Judith and Sam, there was evidence of an overall

lack of interest in all aspects of PA in the present, as illustrated by the following quotations:

‘It (*physical activity*) just doesn’t interest me anymore, it’s a bad thing to say and I used to like it a lot but now, I don’t know it’s just weared off on me’ (Judith)

‘I don’t like, I preferred it in primary cos I was more active and I enjoyed the sports more’ (Sam)

For other girls, vocalisation of their lack of enjoyment of specific activities became apparent in their narratives. For example, Claire stated:

‘Erm, well I’m not too keen on swimming’

In addition, a few of the girls expressed their dislike of hockey for a number of reasons, as highlighted by following quotations:

‘Well I don’t really like hockey, I don’t enjoy it that much’ (Sarah)

‘But I don’t really like hockey, I just think it’s boring’ (Debbie)

‘Cos I don’t really like other sports, other sports like hockey and that cos when I do hockey I always get a sore back cos I’m bending over’ (Carol)

A lack of interest in PE as a subject was also present in the narratives of Sarah and Joan, who both cited that they didn’t choose PE as a subject and Joan even commented:

‘Erm I did pick it (*PE*) but it was just like really boring and....so I swapped to HE (*home economics*)’.

Lack of enthusiasm/desire to be active

A lack of enthusiasm to be active was evident in a few of the narratives. When asked about future PA participation, Claire displayed no enthusiasm or motivation to be active. Similarly, a lack of enthusiasm to be active is also highlighted by Louise’s response when asked about joining another girl’s football team in secondary school:

‘And I’ve just never really got round to looking for one out of school’

The following extract from Judith's narrative typifies the theme of a lack of enthusiasm or desire to be active, contributing to a negative sense of self:

'I don't know if it's just cos I'm lazy and I can't be bothered doing it anymore but like, I say to myself like I want to lose weight, I want to get toned up but when it comes to it I can't be bothered going up to Drumbrae or going swimming or taking part in PE classes, I just can't be bothered with it'

Self-presentational concerns

Evidence of self-presentational concerns was apparent for a number of the girls. For some of the girls, general self-presentational concerns about doing PA in front of others was commented on, with feelings of embarrassment and nervousness being reported. Being uncomfortable when doing PA in front of others was an issue for some of the girls, as reflected by the following quotations:

'It's quite hard for me to do it in front of people when they're looking at me'
(Claire)

'Erm, well there was another friend I've got and we were in that class and when we were with them like, I didn't feel that comfortable like around, running about and that and I don't know why but I felt like everyone was looking at me and I just didn't really like it' (Sarah)

'I don't really like showing (*doing physical activity*) in front of people. I just get a wee bit, a wee bit nervous like showing in front of other people' (Sam)

However, for some of the girls, concerns about PA participation in front of specific groups or whilst doing certain types of activity were also common. For example, in Judith's narrative, self-presentational concerns when doing PA in front of boys was apparent:

'It's just boys if somebody you like or it's embarrassing (*doing physical activity*) in front of them'

Similarly, Claire commented on her concerns about doing gymnastics in front of others:

‘Erm well I find quite hard like gymnastics and stuff when you’re doing that in front of people’

Body concerns

Although a number of the girls talked about their body concerns throughout their narratives, only those comments directly related to PA were considered for further analysis. Judith highlighted her body concerns when participating in swimming:

‘Just when it comes to swimming and I’ve got my belly, I don’t like it’

In addition, Gemma felt if she lost weight this would increase her confidence when active:

‘But erm I’d like to lose a wee bit of weight cos erm.....erm I’d feel a bit more confident in doing it (*physical activity*)’

Lack of competence

Feelings of a perceived lack of competence at PA were apparent in a few of the girls’ narratives. For example, comments from a couple of the girls highlight their perceived lack of competence when participating in PA:

‘I just can’t do it you know can’t do the activities’ (Claire)

‘So erm and I don’t really know, well with other sports it probably is that I don’t like them cos I’m not very good at them’ (Carol)

Judith illustrates her lack of perceived competence compared to her peers by giving an example in her narrative:

‘When we’re doing it I feel like other people, like I feel like I can’t do what everyone else is doing. ‘*Given name*’, she’s really good at gymnastics she done like a somersault thing in the air and I tried it and I ended up falling on my bum and it was so embarrassing and I couldn’t do it’

Lack of confidence

In both Joan and Sam’s narratives, a lack of confidence doing PA in secondary school was evident, as illustrated in the quotations below:

‘Erm...I’m not like as confident (*doing physical activity*) as in primary’ (Joan)

‘Like, I don’t feel as confident (*doing physical activity*) at high school cos I’m around more people’ (Sam)

Dislike doing physical activity alone

In their narratives, both Judith and Carol vocalised a dislike of doing PA alone. When asked about going to dancing lessons on her own, Judith’s response was:

‘It’s just embarrassing being there by yourself; people would look at you being on your norman (*on your own*)...I don’t have the courage to do that’.

For Carol, a dislike of doing PA on her own was evident a couple of times in her narrative:

‘Cos I don’t exactly want to be on my own in PE’

‘I wouldn’t like to do things like football on my, on my own’

6.3.5 Individual Issues

Physical health facilitators (past at primary school)

The theme of Physical Health Facilitators for being active was only evident in one of girls’ narratives and therefore consisted of only one second-order theme (Table 6.12). Cherith reported having increased energy levels in primary school which facilitated her PA participation. This is reflected in the following quotation:

‘I was more interested in doing sports then cos...I had a lot more energy in me’

Table 6.12: Second-order theme comprising the overall theme of Physical Health Facilitators as a positive aspect of past physical activity experiences

Second-order themes	Overall themes
Increased energy levels	Physical Health Facilitators

Individual issues relating to negative aspects of present PA experiences comprised of five overall themes (Table 6.13).

Table 6.13: First-order themes comprising the overall themes relating to Individual Issues of: Physical Health Barriers; Lack of Knowledge; Alternative Priorities; Lack of Organisation of Activities and Lack of Time in relation to negative aspects of present physical activity experiences

First-order themes	Overall themes
Illness/health barriers to PA	Physical health barriers
Lack of energy	
Injury doing PA	
Physical changes influence PA	
<hr/>	
Lack of awareness of PA opportunities in school	Lack of knowledge
Lack of understanding of activity	
Unsure about what is involved in dance lessons	
Difficult finding PA opportunities	
Lack of understanding of activity	
Lack of knowledge about training	
<hr/>	
Spending spare time with friends has priority	Alternative priorities
Part-time job has priority	
Homework has priority	
<hr/>	
Going to gym with friends was never organised	Lack of organisation of activities
<hr/>	
Lack of time to do PA compared to primary school	Lack of time
Stopped football because too busy to make football training at secondary school	

Physical Health Barriers (present at secondary school)

There were four first-order themes relating to physical health barriers to PA evident in the girls' narratives. Both Cherith and Carol reported a lack of energy when participating in PA, as illustrated in the following quotations:

‘I know that I have changed errr, from being energetic to just slopping down on the couch and just watching TV for like half the day’ (Cherith)

‘Cos I, I quite, I get tired quite quickly when I’m doing running and stuff’ (Carol)

General complaints of illness were also barriers to PA for Carol, who hadn’t been well recently and stated:

‘Well I haven’t done very much at all cos I’ve had a sickness for a couple of months and that’s put me off a lot of things’

Here Claire explains how her asthma and weak arm make it difficult to participate in certain activities:

‘I have quite bad asthma which makes it hard for like football and running and all that sort of stuff so I don’t do that much so....’

‘I think it depends what the activity would have to be cos I also have, cos I broke my arm I have quite a weak arm cos I’ve got a plate in it so I also can’t do stuff with that’

Sam was the only girl to comment on how changes to her body influenced how she feels when being active, as highlighted in the following quotation:

‘It feels different. Like see if I’m running or whatever it just feels different running about’

Finally, comments by a couple of the girls indicated that the injuries they got from playing hockey were a barrier to them participating further in that activity:

‘I’m always getting hit by the ball thing that so it’s quite sore so’ (Sarah)

‘Cos I don’t really like other sports, other sports like hockey and that cos when I do hockey I always get a sore back cos I’m bending over’ (Carol)

Lack of knowledge (present at secondary school)

Evident in a couple of the girls' narratives was a lack of knowledge about PA, for example, when talking about reasons for not liking hockey, Sophie commented:

'I don't really understand the rules'

The overall theme of a lack of knowledge is reflected in the following extract from Sarah's narrative when she talks about why she has stopped participating in an after-school football club:

'Erm, well the team that I was on they kept training but I didn't know anything about it. I don't think I got told about any of it, errrrm and so I didn't really get to play anymore and I don't really know much about the clubs here'

Alternative priorities (present at secondary school)

In the context of the comments made, alternative priorities to PA was seen as a different concept to alternative activities to PA (discussed earlier) in that alternative priorities were generally compulsory activities the girls gave priority to over PA, for example homework. The emergence of alternative priorities in secondary school was vocalised in a few of the narratives. An indication that homework was an alternative priority to participating in PA in secondary school was suggested by a few of the girls:

'Like I've sometimes got homework, I never had that in primary so I don't do as much sport as I did'

This is also illustrated in the following extract from Sophie's narratives where spending time with friends and a part-time job are taking priority:

'But I'm always out with my friends so I don't have a lot of time to do it (*physical activity*) and I'm doing paper-rounds and stuff so I never really have time to do anything else, erm....just mostly going out with my friends and dancing and school is really all I do'

However it is important to note that some part-time jobs (e.g. paper rounds) involve PA in the form of either walking or cycling.

Lack of organisation of activities (present at secondary school)

The theme of Lack of Organisation of activities was only evident in one of girls' narratives. In her narrative, Sarah stated that:

‘I wanted to go to a gym and my friends said they would, they would go with me but we kind of never really organised it so we didn't go so’

Lack of time (present)

Lack of time was an overall theme which directly emerged from a couple of the girls' narratives. When probed on reasons why she felt she wasn't as active in secondary school, Sam commented:

‘I don't think I have as much time as I did in primary’

Similarly, when asked why she didn't participate in football after-school in secondary school, Angela's response was:

‘Erm I couldn't make it when the training's on in high school, I was busy then’

6.3.6 Structural analysis

Although not directly related to the structure of the narratives, an outline of the logistics of the narratives relating to narrative control and narrative ownership is presented first, which are commonly acknowledged in narrative research (Gubrium and Holstein, 1998). Subsequently, despite all the girls sharing a common experience of a decrease in their PA levels from primary school to secondary school, **how** the girls narrated their experiences to the author differed considerably. A comparison of all 14 of the transcripts on narrative type; narrative tone; narrative silence; narrative characters and narrative culture was made and subsequently three particular transcripts were isolated. Therefore, in order to illustrate to the reader the diversity of the PA narratives of the 14 girls, the contrasting stories of Carol, Rebecca and Judith are discussed to illustrate key findings of the thematic analysis, using a more holistic form of analysis. This involved structural analysis of narrative type; narrative tone; narrative silence; narrative characters and narrative culture within these three stories.

Narrative control

Guided by previous detailed discussion of narrative control by Gubrium and Holstein (1998), the author examined the idea of narrative control in the girls' PA stories. The school setting provides the narrative framework for conveying personal experience through time, in this instance the past PA experience from primary school and at present in secondary school. Therefore, the narrative structure is already to some extent controlled by institutionalised storytelling circumstances, where the girls' narratives may have been constrained or restricted due to the narrative interview taking place within the school environment. In addition, the narrative interview used in the study was designed to extract the participant's, not the interviewer's, narrative and as a result narrative topics were predefined in the narrative interview schedule. As such, interview circumstances, schedule and protocol dictated that the interviewer asked the questions while the girls provided their stories. Therefore, the author acknowledges that to some extent formal narrative control resides in the study design itself as the stories are not complete prior to their telling but are assembled to meet situated interpretive demands (Gubrium & Holstein, 1998).

Narrative ownership

Typically the personal story is believed to belong to whoever tells the story. However, in this study there is evidence that narrative ownership is distributed between both the interviewer and the participant. The narrative interview is a highly collaborative undertaking in which the interviewer not only elicits a story from the participant but variably controls the editing process (Holstein & Gubrium, 1995). The content of the narrative is dictated from the outset when the narrative topic is introduced to the participant and this control is continued throughout as each topic is presented into the narrative interview. Therefore it could be argued that the narrative control of the interview displaces ownership of the narrative from the participant to the interviewer during the storytelling event. Yet the presence of the interviewer and an interview schedule and protocol is an integral and unavoidable part of the process to obtain the PA stories of the girls. Therefore, the author acknowledges that to some extent the narrative ownership is accounted for by both the participant and the interviewer, who is inevitably embedded within the process of the girls telling their stories. As such, for these girls there is only partial narrative ownership of their PA stories.

Narrative type

In the present study, each of the PA stories of the girls kept to a basic structure that followed a chronological time frame of past to present which was guided by the interviewer. However, throughout their narratives there were instances where temporal sequencing was lost which disrupted the chronological flow of the narratives as some of the girls struggled to distinguish between past and present in their stories. In relation to the types of stories told, it is difficult to directly categorise these into types for all the girls, as previously done by Partington and colleagues (Partington, et al., 2005) because there were unique elements that made each of their stories personal. Therefore, a loose identification of narrative type was made, illustrated in the narratives of Carol, Rebecca and Judith.

Firstly, in Carol's narrative the story type is one of confusion and contradiction in her recollection of both her past and present PA experiences, which made it difficult to extract meaning and content from the narrative. Carol's narrative lacked temporal flow, which also contributed to evidence of inconsistency in her narrative, as illustrated in the following extract when Carol recalls her PA at the weekends:

'Erm at weekends, well...well right now I'm in a show with guidance and I have to go and do rehearsals for that every Saturday so but it's not really like movement cos it's not, I'm not doing dancing in it I'm just doing singing so, although we do have to do a bit of movement in it so that we like sort of like fit in with the dancers but erm....I used to go swimming in the weekends but I kind of stopped doing that recently cos erm my sister was doing swimming lessons for a while after me so I just went swimming when she was doing that in the mornings erm but she, she stopped doing them as well so we just sort of stopped going in the weekends. There was a few times where we went swimming in the week erm on, I think it was on a Tuesday after I'd done badminton but we kind of, we kind of stopped doing that as well cos we only did that for a few weeks I think but erm on Sunday sometimes we would go, well sometimes we hire a badminton court at Wester Hailes where I do my lessons erm but we don't really, well and sometimes we go cycling as well but sometimes I don't really do a lot at the weekends, physical activity'

However, this confused narrative type was only evident for Carol. The narratives of the remainder of the 13 girls could be categorised into the two further narrative types. The second type of narrative identified was characterised by a motivation and desire to be active or continue with PA; however this type of narrative was only evident for two of the girls. This type of narrative was evident in Rebecca's story, where in the past although she danced regularly it wasn't that important to her, but now her interest in PA as well as dancing is rejuvenated. This is reflected in the following extract:

'Erm...I like, I don't, I like dancing because I started when I was three and erm, I don't, I just kind of caught on cos like I really wasn't like into it like at first I just, I never wanted to go to my classes and mum said like I had to but now that I've got into S2 it's kinda like a massive thing for me. I just love to dance, I love to be around people who also want to dance. Erm, I'm going to errr, I mean I'm going, I've been asked to go to Poland with my dance school for two weeks in the summer to dance with the Russian ballet and that's, I'm just really excited about that. Erm cos I've got so many opportunities and I really want to be a dancer and everything when I'm older I just, I just love the light headidness of it all, it's just like I can go in there and I can just like feel happy just to go up and show the class something or do something like that, that's why I like it'

Finally, the third type of narrative identified comprised of an overall lack of enthusiasm to be active and a sense of uncertainty about one's lack of PA. This story type is labelled the master narrative (Sparkes & Partington, 2003) for the PA experiences of adolescent girls because the majority of the girls (eleven) told stories which can be loosely based on this narrative type. This story type was particularly evident in Judith narrative, where the following extract conveys a real sense of Judith's abandonment of PA:

'I don't do any sport at all anymore, I've gave up on it. I try to, I do try, I enjoy doing gymnastics cos that's an all girls class. I enjoy doing gymnastics but that's it really, I don't like doing anything else....I just gave up trying I think, I don't know why but I just....I don't like doing it anymore...I'm not sure, it's just...like I used to really enjoy doing it and then when I got to high school I just, sort of changed and I just didn't enjoy it any more....but I don't know whether that's

because we met new people, different people in our class that, I don't know I just stopped liking it'

Narrative tone

Closely mirroring the narrative type of the girls' stories is the difference in their narrative tone. Crossley (2000) advocates narrative tone as perhaps the most pervasive feature of a personal narrative which is conveyed in both content and structure of a story. Within each of the three story types identified, a distinct narrative tone is apparent which is often reflected by the narrative type. For example, Carol's inconsistent narrative is constantly changing in its tone as highlighted in the following extract, starting with her being pessimistic and gloomy in relation to her PE lessons in first year at secondary school:

'Well with PE in first year we didn't really get a choice like what we were going to do, they just sort of told us like what we were going to do and we did it for like a block, like a block, like a few weeks each term and well it really depended on what sport it was whether I liked it or not but it was like things like, I think we did hockey, we done rugby and we done...we done swimming as well...'

This then shifts to a positive tone when talking about her enjoyment of swimming but then quickly reverts back to being negative when talking about her sore back whilst playing hockey:

'Erm swimming was probably the best for me cos I don't really like other sports, other sports like hockey and that cos when I do hockey I always get a sore back cos I'm bending over'

A positive tone then appears when discussing the choice of activities available in PE but is short-lived as she quickly points out that there is actually only one option she would like to do:

'but erm...erm but in PE, I mean in S2 erm we get, we get more choice because we get to choose out of like three things what we want to do. It's probably been better for me really cos errr well I've been doing aerobics, well dancing up to now in PE until they, they said that badminton was going to be an option but I'm....well usually there's only like one option that I would actually want to do

because the other ones are like football and basketball and I don't really like them'

In Rebecca's narrative, a bright and optimistic tone is conveyed throughout the majority of her PA story when she recalls both her past and present PA experiences. In the following extract Rebecca conveys a positive tone when talking about trying different activities in her PE lessons:

'Erm it kinda opens you up to new ideas of what you can do like I never thought I'd be able to do hockey but now it's actually quite enjoyable and I really like it and you kinda just pick up new things along the way and I really like swimming and stuff and I think, I just like it, I dunno why I just like because you're with your friends and you just have a good time'

Contrary to Rebecca's optimistic and positive PA story is the narrative tone prominent in Judith's story. Evidence of a positive tone when recalling her past PA experiences is short-lived when there is an abrupt shift in tone to being quite negative about her present PA experiences:

'Well in primary, I used to be really active in primary, I used to like, I used to be in the basketball team and I used to be in the athletics team.... and I used to be really good at basketball so we went to a, erm, tournament thing and we won and stuff and I was better then and I used to be, we used to go swimming and I used to really like that. Errrrr but then when I got to high school, I don't know I just, I stopped like doing it. But I used to really, I didn't care what anyone thought when I was in primary when I done sport but now, I don't know I just....I don't like doing it anymore'

In addition, Judith's tone is quite pessimistic and defeatist throughout the majority of her narrative when she talks about her present PA experiences:

'I don't know if it's just cos I'm lazy and I can't be bothered doing it anymore but like, I say to myself like I want to lose weight, I want to get toned up but when it comes to it I can't be bothered going up to Drumbrae or going swimming or taking part in PE classes, I just can't be bothered with it'

Narrative silence

A predetermined topic for the narrative interview was to ask the girls how they felt about changes that had happened since primary school, where the interviewer provided the girls with prompts such as, 'for example changes to your personality, changes to your body'. When this topic was introduced into the narrative interview, for the majority of girls, the flow of their narratives halted and a sense of being uncomfortable emerged, resulting in narrative silence. Furthermore, the majority of the girls were much more willing to elaborate on changes to their personality rather than changes to their bodies, as illustrated in the extract from Rebecca's narrative, where long pauses contribute to the narrative silence when she talked about changes to her body:

AM: Ok, brilliant. And just moving on now to sort of the changes that have happened since you were in primary school so erm you might have noticed changes to your body, changes to your personality and stuff, erm, can you tell me a little bit more about how you feel about these changes that have happened?

P/T: Erm.....my personality had completely changed, erm, I dunno.....I came up and I was really really shy, I didn't want to speak to anyone I just wanted to be by myself but now I started to get chatting to loads people and now it's, I'm really confident about chatting to people and stuff so that's absolutely fine. Erm.....changes to my body, erm.....I've just changed (laughs).....

AM: In what ways have you noticed change?

P/T: Erm.....it's just like....I've changed if you know what I mean, I've kind of grown up a lot and I think I've stopped growing now...

AM: Ah ha

P/T: And I've grown taller and I've got bigger erm....there's just been lots and lots of stuff going on'

Episodes of narrative silence were evident in almost all of the girls' narratives when asked about their physical changes, except Judith who was forthcoming with examples of how her body had changed since primary school:

'I got chubbier when I, from P7 I used to be quite slim back then but up to second year I got chubbier. I put on a bit of weight, I've got armpit hair so I have to shave now, pubic hair, I've got breasts, I started to grow....just normal stuff'

Narrative characters

In all of the narratives, characters are introduced by the girls into their PA stories to aid elaboration and to illustrate examples of their PA behaviour; however it is evident that these characters are used differently by each of the girls. In Carol's narrative, several characters emerge throughout. Firstly she talks about her family and how at the weekends she participates in PA predominantly with her family. Although her family are referred to several times throughout her story, Carol does not specify family members, they are merely referred to as a whole:

‘On Sunday sometimes we would go, well sometimes we hire a badminton court at Wester Hailes where I do my lessons erm but we don't really, well and sometimes we go cycling as well but sometimes I don't really do a lot at the weekends, physical activity’

Carol's friends are also brought into her story at several points, particularly when she talks about her perceived PA competence compared to her peers, as illustrated in the following extract:

‘If I was playing like football with my friends I'd know that I wouldn't be as good as some of them but I know some of my friends probably don't like it much either so they probably wouldn't be that good at it either so we just sort of, well there was people in primary school that I just used to sort of like stay with when we were doing PE because they were like the same as me they didn't really like it that much and they weren't like very good at it so I usually was just like when we were going running round the field there was usually just like talking to them when we were running cos we used to like run together round cos erm we were usually like last to come all the way round but just cos we weren't like very like fast but I don't, I dunno about, if we're doing badminton with my friends I don't mind doing that cos I know that I'm, well I'm probably, I probably am better than some of them’

Finally, boys are an integral part of Carol's narrative and are used several times to illustrate feelings of embarrassment when doing PA and her dislike of the competitive nature of boys, as reflected in the following extract:

‘I didn’t really like doing it with the boys cos, cos they’re quite like competitive so they were like, when we were doing things they were like trying to go like really fast and everything like that and like when we did races and stuff when we were swimming they probably, well they probably were faster than me and like they get annoyed if you don’t go fast enough for them, things like that. Like cos they think oh we’re losing now because erm, she’s going too slow’

Overall in Carol’s narrative several ‘collective’ characters emerged and these characters allowed Carol to elaborate on several aspects of her PA story. However, Carol did not specifically detail family members, friends or boys in her narrative and used them only in general terms. Although Rebecca introduces only a couple of family characters into her story, they are specific characters and are used primarily to illustrate examples of her PA participation:

‘Erm, I think I went swimming a lot with my dad on Sundays and my sister. I think I went swimming like nearly every Sunday cos we do that every Sunday’

Rebecca’s mum as a narrative character is established early on in her narrative and appears to be considered by Rebecca as influential in both her encouragement of her daughter’s PA participation and involvement in participating with her, as highlighted by these two extracts respectively:

‘I like dancing because I started when I was three and erm, I don’t, I just kind of caught on cos like I really wasn’t like into it like at first I just, I never wanted to go to my classes and mum said like I had to but now that I’ve got into S2 it’s kinda like a massive thing for me. I just love to dance’

‘When I’m not doing dancing erm I do like workout DVD’s with my mum or I go running with her and stuff like that cos I enjoy that’

In contrast to both Carol and Rebecca, Judith establishes a number of characters throughout her PA story and these characters are often referred to in more specific terms, by their names. In the following extract, Judith introduces both family and friends when recalling her past PA behaviour:

‘I would go swimming as well. My dad would take me swimming on Sundays, we’d go swimming together, and I used to go to play tennis with Megan and mum

would take us up to, it's somewhere near Telford, I don't know where it is, we went somewhere near there and we played tennis every Monday night'

Specific family members are mentioned again later on in her story when Judith compares her own PA participation with the rest of her family:

'Like all my family are really like active, my dad and my brothers go to the gym all the time and my sister she's really skinny and she goes to the gym as well and I want to be able to do that too but it's just..... I'm not, I don't like it anymore'

Megan is a character brought into Judith's narrative several times as an significant friend involved in her PA story, as highlighted in the following extract where Judith is asked about the importance of having Megan with her when participating in PA:

'Yeah cos I asked Megan, it was yesterday we were in assembly and then Mr Quinn was talking about dance and I went and said do you want to go to dance on, on a Friday after school and she said no I don't wanna do it so then I don't wanna do it if no one else is going'

Finally, when talking about her perceived PA competence, Judith compares herself to her peers and elaborates further by providing a specific example of a girl in her gymnastics class she compares herself to:

'Like I don't know....erm....when we're doing it I feel like other people, like I feel like I can't do what everyone else is doing. Everyone else is like.... '*Given name*', she's really good at gymnastics she done like a somersault thing in the air and I tried it and I ended up falling on my bum and it was so embarrassing and I couldn't do it. But I can do some stuff but...it's just like I'm embarrassed to try cos everyone else can do more things so it's just I don't want to try'

For all the girls, there are narrative characters available when they tell their PA stories; however by comparing each story it is apparent that the number of characters and detail about these characters offered during their stories varies greatly. It is also clear that their PA stories are not based on their individual experiences but are influenced by their narrative characters in different ways.

Narrative Culture

Narratives are not told in a vacuum; rather, they are encouraged and shaped by a certain social context. An individual's own story is shaped, facilitated and constrained by narratives that circulate within the culture in which they are immersed, allowing the narrative researcher to move beyond an individualistic focus to a more complex exploration of people as both social and individual beings (Smith & Sparkes, 2009a). Therefore, an examination of the cultural context of the girls' narratives in relation to family, peer and school cultural influences is crucial. Although the cultural context of the girls' stories was to some extent predetermined by the interviewer, their stories of being in a PA culture in primary school and secondary school differed greatly for all the girls, despite there being a common decrease in their PA levels.

Being part of a PA culture for Carol was not as enjoyable in both primary school and secondary school, particularly in a competitive culture, as vocalised by her in the following extract:

‘I dunno really, it's just, that's probably why I don't like doing it with boys because they're more competitive than girls are I think about sport, although some girls are quite competitive if they're like quite active but I don't really’

In contrast, acceptance of a PA culture was apparent in Rebecca's narrative where she was immersed in her dancing several evenings a week and all day on a Saturday, surrounded by peers who were highly active, yet she seemed to thrive in this type of culture, as reflected in the following extract:

‘I just love to dance, I love to be around people who also want to dance. Erm, I'm going to errr, I mean I'm going, I've been asked to go to Poland with my dance school for two weeks in the summer to dance with the Russian ballet and that's, I'm just really excited about that. Erm cos I've got so many opportunities and I really want to be a dancer and everything when I'm older’

Telling stories can also serve a range of needs (Baumeister & Newman, 1994) and for some of the girls, by telling their PA stories they were able to convey cultural norms. Overall there were noticeable shifts in cultural norms in relation to PA behaviour in

adolescent girls. For example, this was evident in Carol's narrative when she recalled changes in activities at break and lunch times in secondary school compared to primary school:

'Yeah probably you start just like, you don't do as much like running when you're out in the playground when you get older because I just talk with them in the playground now so...'

Similar shifts in cultural norms were apparent for Judith in that being active with both boys and girls at primary school was perceived as normal but in secondary school this changed, as illustrated by the following extracts:

'Well in primary, I used to be really active in primary, I used to like, I used to be in the basketball team and I used to be in the athletics team..... and I used to be really good at basketball so we went to a, erm, tournament thing and we won and stuff and I was better then and I used to be, we used to go swimming and I used to really like that. Errrrr but then when I got to high school, I don't know I just, I stopped like doing it But I used to really, I didn't care what anyone thought when I was in primary when I done sport but now, I don't know I just....I don't like doing it anymore'

'Like cos, in primary school, we used to have boys in our class and nobody cared cos they were just our friends and stuff but now when you get to high school, like, if you fancy someone then it's just embarrassing trying to do PE in front of them and sweaty and that, you don't wanna do that'

6.3.7 Summary of structural analysis findings

The findings of the structural analysis highlight that for all 14 of the girls, there were differences in how they recalled their PA stories, shown in the three contrasting stories of Carol, Judith and Rebecca. For example, the tone of their narrative differed depending on what aspect of their PA experience they were recalling. Instances of narrative silence were also prevalent, where interruption to the flow of their stories conveyed a sense that the girls were uncomfortable discussing the physical changes that had occurred since primary school. Both general and specific characters were also

used by the girls in their stories to convey PA experiences of primary school and secondary school. Finally, through their stories, the narrative culture was explored and highlighted how the cultural context for their PA experiences differed for each girl and the impact this had on their PA behaviour.

Although by no means exhaustive, the author has provided a structural analysis of a selection of three of the girls' narratives to tease out certain aspects of their stories in relation to type, tone, character and cultural context. In the following section, these narrative findings will be discussed in conjunction with the thematic analysis findings in order to further understand the decrease in the PA levels of adolescent girls from primary school into secondary school. In addition, a detailed discussion on narrative as a method for exploring the decrease in PA in adolescent girls will also be provided.

6.4 Discussion

The present study aimed to examine the possible influence of additional variables on the decrease in PA from primary school to secondary school and to further examine the potential influence of maturation and physical self-perceptions during this transitional period using a narrative approach. Adopting a narrative approach involved conducting narrative interviews and using IPA and structural analysis to examine in-depth the narratives of the girls. From the narrative interviews, a number of positive and negative aspects of the girls' past and present PA experiences were generated. However, a focus on what the girls encountered in relation to past PA experiences compared to what the girls were lacking at present was used to best explore the research question. The positive aspects of past PA experiences and negative aspects of present PA experiences elicited both commonly shared themes among the girls as well as themes specific to each girl. The following section will discuss these overall themes in relation to existing literature, incorporating findings from the more holistic form of structural analysis where appropriate. The findings will be discussed relating to the four dimensions of: Physical Activity Opportunities; The Environment; Sense of Self when Active and Individual Issues.

6.4.1 Physical Activity Opportunities

In relation to their overall PA levels, several of the girls commented on their perceived lack of PA in secondary school compared to primary school and this was also reflected in the narrative tone of some of the girls' narratives. Evidence of a positive tone when

recalling past PA experiences was apparent which promptly shifted to a negative narrative tone when the girls talked about their present PA experiences. This awareness of a decrease in their own PA levels highlights that physical inactivity at secondary school is an issue and a number of the girls are aware of it. These responses are in line with findings of study one and recent research by Gidlow, Cochrane, Davey and Smith (2007). Gidlow and colleagues compared the PA levels of primary school and secondary school pupils and preliminary findings indicated that primary school pupils were more active both during and out of school, with significant declines in both across increasing year groups.

Utilising the opportunity for active travel to primary school in the past was apparent for some of the girls, with walking being the predominant form of commuting. In most industrialised countries, commuting to school has the potential to contribute to increasing daily PA levels. Evenson, Huston, McMillen, Bors and Ward (2003) found that children and adolescents who walk or cycle to school have 50% more moderate to vigorous PA per day due to the school journey *per se*. Similarly, the time available at break and lunch recess provides an opportunity to increase PA whilst at school (Trudeau & Shepard, 2005), which was taken advantage of by the majority of girls during their time in primary school. Their activity was generally characterised by active games and spontaneous play. However, this changed in secondary school where there was limited evidence of PA at break and lunch times and almost all of the girls reported just sitting and chatting with friends. This finding supports longitudinal research by McKenzie, Sallis, Elder, Berry, Hoy, Nader, et al. (1997) who examined PA levels in young children at recess and from the findings concluded that as children progress through the school system, there is a trend toward less active free time at break and lunch recess.

For an increasing number of children, the PE lesson is now the only opportunity to engage in moderate to vigorous PA. Furthermore, an increase in the time schools allocate to PE has been suggested as a means of compensating for the increasing sedentary behaviour of children and adolescents outside of school (Trudeau & Shepard, 2005). The activities offered in PE at primary school and secondary school were very similar, with the girls reporting participation in more traditional activities, for example, basketball, hockey and swimming to non-traditional activities such as rounders, aerobics and dance. However, although a PE core lesson of two hours of quality PE per

week is advised in Scottish secondary schools, a number of the girls stated that they had not chosen PE as a subject option at secondary school, indicating that they were not utilising this as an opportunity to be active early on in secondary school. Hardman and Marshall (2000) commented on an international trend whereby the time allocated to PE increased from the first year until the sixth year of primary school (equivalent of primary seven year in Scotland) but decreased in subsequent years of schooling. Therefore, by offering PE as an option in the early years of secondary school, schools are reducing the opportunity for PA immediately after the girls have moved from a compulsory PE environment in primary school.

The opportunity to participate in extra-curricular and out of school PA was used by all of the girls in the past. However, at secondary school there was a general lack of extra-curricular and out of school PA participation. This was particularly evident for a couple of girls who had participated in a large amount of extra-curricular PA in after-school clubs and team sports in primary school yet this had not been sustained when the girls moved to secondary school. Research available on extra-curricular PA is sparse and in general the choice of extra-curricular PA is limited to traditional activities, for example football, tennis and hockey which only cater for a small proportion of pupils who are competent and athletically endowed to participate in these activities (Trudeau & Shepherd, 2005).

Although increasing efforts are being made to try and increase the variety of activities on offer to adolescent girls through both local and national PA initiatives in Scotland, the findings suggest that alternative activities to being active are preferred in secondary school. For example, a large number of the girls reported spending time with friends, going shopping and going to the cinema rather than participating in PA. Similar findings were evident in a study of adolescent girls aged 14-16 years by Whitehead and Biddle (2008), where the authors suggest that, “the personal importance attached to PA upon entering adolescence is a determining factor in whether girls will continue to be active or will, instead, chose to the more common norms attached to being a teenage girl whereby PA is not considered to be important” (p. 251). Therefore, it could be argued that despite these varied physical activities being offered to the girls through local and national initiatives, it may be unlikely that they would utilise these opportunities to be active unless the activities on offer can possibly incorporate these alternative activities that the girls prefer.

6.4.2 Environment

Sallis and Owen (2002) define the environment simply as the space outside the person, which is comprised of both the social environment and the physical environment. In light of this definition, it would appear the environment is hugely important and in the findings the greatest number of themes emerged related to a supportive PA environment in the past and an unsupportive PA environment in the present.

Social support

Lox, et al., (2006) define social support as, “the perceived comfort, caring, assistance and information that a person receives from others” (p.106) and it has previously been cited as one of the most important correlates of PA in children and adolescents (Sallis, et al., 1992; Taylor & Sallis, 1997). Taylor and colleagues categorise social support as consisting of emotional, informational and material support. Emotional support is encouragement and empathy from others in attempts to be physically active. Informational support consists of information and advice given by others concerning PA and material support is direct help, such as driving children to an after-school club. In the findings there was evidence of a significant shift in the degree of social support provided in primary school compared to secondary school and also in who the girls looked to provide this type of support. In primary school, peer support in the form of friend involvement in PA was apparent for the girls, coupled with a social environment where class sizes for PE were smaller and more familiar to the girls. However, in contrast to this supportive environment, at secondary school, the girls commented on a lack of peer interest in participating in certain activities and how this influenced their PA choices and behaviour. Consequently, a lack of peer involvement in PA could have contributed to the decrease in PA participation in a number of the girls. The study findings support Voorhees, et al. (2005) whose research suggested that social support from peers transpired as an important correlate of PA, most notably in school and leisure time PA.

In addition, a number of the girls reported a dislike of doing PA alone in the absence of their peers as support. Similar findings were reported by Whitehead and Biddle (2008) who highlighted that for adolescent girls, having friends with them when participating in PA was crucial and the thought of being active without them was threatening and could result in a complete lack of PA participation. Recent research by Jago, et al. (2009) has highlighted that a number of diverse friendship groups (e.g., at school, in

the neighbourhood, during extra-curricular activities) could mediate higher levels of PA due to an increase in the number of peer PA resources available to draw upon. Therefore, the findings support the concept that peer involvement in PA contributed greatly to whether girls participate in certain activities. Furthermore, as girls enter secondary school for the first time, having a friend present when doing PA in a relatively unfamiliar environment may be of increased importance in early adolescent girls.

The study findings also highlighted a shift in the level of family support to be active from when the girls were in primary school to now in secondary school. For example, in primary school, a couple of the girls described gaining the support they received to be active from several family members in terms of emotional support, material support and whole family involvement in PA. However, this supportive social environment changed in secondary school, primarily due to the impact of family dynamics on PA participation and alternative priorities within the family environment, which impacted on the level of material support given. For example, some of the girls reported it being difficult for their parents to pick them up from after-school clubs at secondary school due to work commitments and accommodating other siblings' PA behaviours. As such, the findings suggest that a supportive family environment may impact on PA participation for early adolescent girls, particularly in relation to material support. This is in line with the research of Biddle, Whitehead, et al. (2005) whose findings were more supportive of the role of the family mainly through aspects of family support, rather than actual parental PA participation. Recently, this has been echoed in longitudinal research by Ornelas, Perreira and Ayala (2007) examining parental influences on PA. In their findings, parental engagement, parent-child communication and family cohesion were all significant predictors of PA participation.

In addition to peer and family support, the provision of leader support was also important for a few of the girls. However, despite the inherent potential for a leader to influence PA adherence and behaviour, the research literature examining the role of an exercise leader in adolescent PA behaviour is sparse. The Fit for Girls (2008) initiative provided anecdotal evidence that the role of the type of leader delivering PA to adolescent girls may have an influence on PA participation. Given that for some of the girls their PE lesson is the only opportunity to engage in moderate to vigorous PA it would seem that the influence of this type of social support is worthy of further

examination. Social support is predominantly provided by peers and family; however additional significant others can provide this type of support, for example teachers. The narrative characters introduced by the girls into their narratives allowed the researcher to gain a detailed insight into who they like to participate with in PA at both primary school and secondary school. These characters are both general, for example ‘family’ and ‘friends’ in some of the narratives; however for others naming specific characters in their narrative can be interpreted as a way of communicating to the researcher the importance of having specific people supporting their PA participation. Inclusion of a variety of characters in the girls’ PA narratives further emphasises the importance of social support in their PA behaviour and choices and the need to consider this in the design of appropriate PA interventions for early adolescent girls.

Finally, the findings highlight that the social environment changes as the girls have moved from primary school into secondary school, where friends rather than parents now appear to provide the emotional support for PA participation and material support is relied upon from family members. This is comparable to previous research which suggests that during adolescence peers become a powerful social influence, more so than family members (Wold & Anderssen, 1992; Springer, Kelder & Hoelscher, 2006; Hohepa, et al., 2007). This behaviour is not unexpected and is a natural consequence of young people increasing their independence from their families and expanding social networks external to the family environment as they move through adolescence (Eccles, 1999). However, as indicated in the findings, this shift in provision of social support to a reliance on peer support could contribute to the decrease in PA in adolescent girls if peer interest in PA is lacking.

Comfortable in PA and PE environment

The study findings highlighted that feelings of being comfortable in the PA environment at primary school were created through a sense of familiarity, working with peers of similar abilities and through participation in girls-only PA in extra-curricular and out of school activities. However, this agreeable and supportive environment for PA participation changed in secondary school where the presence of boys in PE, feelings of discomfort in a competent and competitive PA environment and a lack of teaching of skills in PE all contributed to an unsupportive PA environment.

In the findings, experiencing a comfortable environment in PE at primary school was reflected in the narratives of the girls. Aspects that contributed to a comfortable

environment in PE were a sense of familiarity with peers and the opportunity to work with peers of a similar ability. These findings support previous research which has demonstrated that in primary school, PE is usually taught by the classroom teacher where pupils are in a relatively small and familiar environment (Fairclough & Stratton, 2005) and have known their peers, both boys and girls, for seven years. Furthermore, the PE curriculum in primary school tends to focus on the development of core movement skills through simple activity forms (Qualifications and Curriculum Authority, 2000; Raymond, 1998), therefore differences in physical abilities may not be as apparent in primary school.

A shift in the PA environment from primary school to secondary school is inevitable. In PE lessons in secondary school, provision of the opportunity to experience and develop across a greater breadth of activities is available (Fairclough & Stratton, 2000). However, in secondary school a core lesson of two hours of PE is advised, therefore it is likely that the majority of references made by the girls about feeling uncomfortable in the PA environment at present referred directly to their PE lessons. In the findings, reports of feeling uncomfortable in a perceived competent environment in PE was an issue for some of the girls. Furthermore, some of the girls reported a lack of teaching of skills in PE where they were simply expected to be able to do the activities without being given the opportunity to master the skills, which could further exacerbate feelings of being uncomfortable in such competent environments.

In the findings there was also evidence of a dislike of team sports, in particular football and hockey, due to a perceived lack of skill and ability. In an examination of the contribution of secondary school PE to lifetime PA, Fairclough, Stratton and Baldwin (2002) illustrated that team games (e.g., football and hockey) predominated over those activities more likely to translate into lifetime activities (e.g., swimming and jogging) in the school curriculum in secondary school. Therefore, a focus on competence and skill acquisition dominates the curriculum in secondary school compared to core movement skills through simple activity forms in primary school. Furthermore, such team games require full body intermittent translocation for sustained periods which is often less physically manageable for girls who have a relatively higher body fatness than boys (Fairclough & Stratton, 2005). Therefore, the dominance of team games in PE could have resulted in the girls feeling uncomfortable in a competent environment.

Further adding to feelings of being uncomfortable in PE, the findings highlighted that the presence of boys enhanced the competitive nature of PA participation where girls perceived the environment in mixed-sex activities to be more competitive. This was also reflected in the cultural context of some of the girls' narrative where a competitive culture for PA at secondary school appeared to negatively impact on the girls' PA behaviour. Both findings from the thematic analysis and structural analysis support recent qualitative findings by Biddle, Coalter, et al. (2005) who examined the attitudes to PA in adolescent girls. Findings revealed that a competitive environment for PA resulted in feelings of discomfort for a proportion of the girls in the study. In addition, the dislike of the presence of boys during PE lessons when participating in certain activities was cited by a large number of the girls and was an important contributor to their discomfort in the PA environment. This was particularly pertinent in activities where the girls had to reveal parts of their bodies, for example swimming and gymnastics. This is in line with previous research by James (2000) whose findings demonstrated that participation in swimming for a sample of Australian adolescent girls was adversely affected by derogatory remarks made by boys. Therefore, it is possible that the physical presence of boys whilst participating in such activities enhances the girls' existing feelings of discomfort when having to reveal parts of their bodies.

Discussion of the mixed-sex PA environment was also apparent in the cultural context of some of the girls' stories where being active with boys was perceived as normal at primary school yet this cultural context in their narratives shifted in secondary school, where some of the girls reported feelings of being uncomfortable and a lack of competence when active in front of boys. However, traditionally PE in Scotland has been taught in mixed sex classes. Recently, the Fit for Girls (2008) initiative piloted the provision of a girls-only environment for PE lessons in a selection of Scottish schools. The preliminary findings of the pilot study and those of the present study suggest that providing a girls-only environment could lead to an increase in PA participation due to a shift in the focus from being competent and competitive to improving competence and self-efficacy. However, the findings of the Fit for Girls (2008) study are anecdotal and at present there is no known empirical research to support the idea that providing a girls-only environment does lead to an increase in PA participation.

Physical inactivity culture at break and lunch times

In the previous section (6.4.1), it was apparent that the majority of the girls utilised the opportunity to be active at break and lunch times in primary school, where it appeared to be socially acceptable. However, in secondary school, a physical inactivity culture emerged where being active at break and lunch time was deemed to be socially unacceptable, indicating a distinct shift in the socio-cultural PA environment from primary to secondary school. This was also reflected in the structural analysis findings, where shifts in cultural norms in the activities participated in at break and lunch times in secondary school compared to primary school were portrayed through a large proportion of the girls' narratives. For example, the girls felt that they were too grown up to be running about at secondary school and instead just sat and chatted with friends.

Although there is research available highlighting a decrease in levels of PA during break and lunch times from primary school to secondary school (refer to section 6.4.1), there is no known empirical evidence examining the cultural influence on this decrease. Furthermore, in a recent review of environmental correlates of youth PA (Ferreira, et al., 2007), the authors point out that aspects of the school physical, socio-cultural, economic or political environment remain relatively unexplored in the literature aimed at understanding adolescent PA participation. Therefore, evidence of a distinct shift in the PA culture from primary school to secondary school in these findings adds to this limited research area. Moreover, it is clear from these findings that aspects of socio-cultural change within the school environment is an area which warrants further investigation in order to understand PA behaviour.

Physical environment

The term physical environment refers to the material objects and facilities present within an environment (Humpel, et al., 2002). The physical environment has recently received increased attention in the PA literature and in the findings it emerged as a theme, both as a past facilitator and a present barrier to PA participation for a number of the girls. The study findings highlighted that in the past, use of local sports facilities and the local environment, for example biking along the canal, facilitated PA participation for a selection of the girls. This finding provides support for systematic review findings by Humpel and Colleagues (Humpel, et al., 2002) where there was evidence of significant associations between PA and aspects of the physical

environment, for example, ease of access to facilities, having places nearby to be active and perceived positive aesthetics of the local area.

The study findings also revealed that good weather facilitated past PA participation yet was also cited as a present barrier to PA for some of the girls when the weather was bad. Despite this finding being contrary to results from the systematic review of environmental factors and PA (Humpel, et al., 2002), it does support research by Brodersen, Steptoe, Phil, Williamson and Wardle (2005) whose findings indicated that the girls were less active when the weather was wetter, suggesting bad weather conditions are a negative correlate of PA participation. Furthermore, in their recent review of studies that have specifically examined the effect of season and weather on PA, Tucker and Gilliland (2007) concluded that levels of PA vary with seasonality and the ensuing effects of poor weather is an identified barrier to PA participation among various populations, including adolescent girls.

Finally, for one of the girls, parental safety concerns of the surrounding environment were identified as a present barrier to PA participation. This finding contradicts those of Humpel, et al. (2002) where no significant associations were found between PA and safety concerns yet provide support for more recent research by Dwyer et al. (2006). Their focus group research findings suggested that participants who reported parental concerns regarding their safety deterred them from PA participation. In addition, as a result of findings from a United States national sample of correlates of PA in children aged 9-13 years, Heitzler, et al. (2006) suggested that ensuring the provision of safe and accessible environments is essential in order to encourage PA participation. The findings suggest that adequate provision of both a safe PA environment and contingency plans for poor weather could facilitate PA participation in adolescent girls.

6.4.3 Sense of Self when Active

The findings of the study suggest that there was evidence of a positive sense of self when active in the past at primary school which relates to an overall positive sense of well-being when engaging in PA. This included increased confidence and competence resulting in a sense of enjoyment and interest. However, at present for a large proportion of the girls in the study, there was evidence of a negative sense of self when active which encompasses an overall negative sense of well-being when engaging in PA. This included a lack of enjoyment and interest, self-presentational concerns and a

lack of motivation and enthusiasm. This change in the overall sense of self for the girls when active from primary to secondary school is discussed below in relation to aspects that contribute to both a positive and negative sense of self.

Enjoyment

In the present study, enjoyment of PA at primary school was consistently cited by the girls in their narratives, stressing its importance as a key contributor to a positive sense of self when active. This is in line with previous research which has consistently shown a positive, significant relationship between enjoyment and PA in adolescent girls (Carroll & Loumidis, 2001; Motl, et al., 2001; Fairclough, 2003), with recent data from Scottish adolescent girls (Biddle, Coalter, et al., 2005) highlighting enjoyment as the main reason for participating in PA for the majority (73%) of girls aged 11-16 years. However, in the findings there was notable lack of enjoyment of PA in secondary school for a large proportion of the girls, primarily due to a lack of interest in PA, with some evidence of a lack of enjoyment of specific activities.

As pointed out by Biddle, Coalter, et al. (2005), enjoyment can mean different things to different people and achieving a sense of enjoyment can be influenced by a variety of factors, for example the type of PA, peer involvement, perceived competence. Although the findings do highlight a decrease in levels of enjoyment from primary school to secondary school, it is difficult to establish what contributed to a sense of enjoyment in the past and lack of enjoyment in the present without considering other possible influences. Therefore, the concept of enjoyment will be discussed in relation to other influences where appropriate.

Competence

The term 'perceived competence' is typically defined in the research literature as individuals' perceptions of their competence in a specific domain (e.g., academic, social, physical, Harter, 1982; Weiss, 1987). In relation to the physical self, Harter's (1978, 1982) competence motivation theory predicts that those high in perceptions of competence will be more likely than others to engage in and continue to participate in PA. In the findings of this study, perceived PA competence at primary school was primarily related to the girls gaining a sense of achievement and mastery through PA opportunities, as advocated by Harter (1978; 1982). However, at secondary school a perceived lack of PA competence was evident contributing to a negative sense of self, yet this was primarily related to negative social comparison of ability with peers.

Therefore, from the findings, it could be argued that in this sample of adolescent girls at secondary school there was a tendency to assess their perceptions of competence by focusing more on competitive competence orientation, i.e. comparing their physical competence with their peers, rather than individual mastery orientation, which could have resulted in a less positive sense of self. The findings also lend support to the Big-Fish-Little-Pond Effect (BFLPE; Marsh, 1987) which postulates that individuals compare their abilities to those of their classmates and use this social comparison as a basis for forming their own self-concept, in particular perceptions of competence in relation to their physical self-concept. The study findings would suggest that a focus on providing opportunity for individual mastery attempts to allow the development of perceived competence at secondary school and reducing a focus on competitive competition orientation would be more beneficial in increasing perceptions of competence in adolescent girls. This could therefore increase the likelihood of persistent PA behaviour in early adolescent girls.

The findings also revealed instances where a lack of perceived PA competence impacted on feelings of embarrassment, self-presentational concerns and an overall lack of enjoyment. This is in support of findings by Biddle, Coalter, et al. (2005) where a lack of perceived competence correlated positively and strongly with feeling uneasy taking part in sport and PA in front of others and negatively with enjoyment. This highlights the overall negative impact a lack of perceived competence can have on other aspects of the self and PA participation in adolescent girls. Similar concerns over lack of competence leading to feelings of self-consciousness were raised in focus group discussions by adolescent girls aged 14-16 years (Whitehead & Biddle, 2008). For example, several of the girls made normative references to other more competent girls implying that an increase in ability would result in feeling less self-conscious. Therefore, in line with previous research, the findings suggest that a focus of developing perceptions of competence through mastery of skills would also facilitate the development of a sense of enjoyment, reduce feelings of self-consciousness and self-presentational concerns.

Enthusiasm/desire to be active

In general, the findings indicated feelings of desire, intention and enthusiasm to be active at primary school for a large number of girls who were proactive in seeking out opportunities to be active in the past. Yet this sense of enthusiasm was not reflected in

their present PA behaviour where, for some of the girls, there was evidence of laziness and feelings of not being bothered to participate in PA. This theme was also reflected in the narrative type and tone of several of the girls' narratives, generally comprising of an overall lack of enthusiasm to be active and a sense of uncertainty about their lack of PA.

From the findings it is difficult to draw any definite conclusions as to why, for some of the girls, there was a stark shift from primary school to secondary school in their desire and enthusiasm to be active. Primarily, this was because, when probed on this issue in the narrative interview, the girls themselves were unable to elaborate further or offer any explanation. Additionally, it is likely that until now, these girls have not considered reasons for their decrease in PA behaviour in detail.

Self-presentational concerns

A general lack of self-presentational concerns when active and being comfortable participating in PA alone was apparent for the girls in primary school. However, in secondary school, this was not the case for the majority of the girls where self-presentational concerns manifested in a variety of ways when the girls were active. This was primarily in the form of being uncomfortable when doing PA in front of others, and this could be related to social physique anxiety (SPA). SPA was first introduced by Hart, Leary and Rejeski, (1989) who defined SPA as anxiety that people experience in response to other's evaluation of their physique. The significant increase in self-presentational concerns reported by the girls in secondary school is supported by findings by Biddle, Coalter, et al. (2005) where feelings of self-consciousness participating in PA in front of others were repeatedly raised in focus group interviews and reflected in survey findings. Therefore, in support of research by Hausenblas, Brewer and Van Raalte (2004), the findings highlight that concerns of revealing one's physique to others in an exercise setting could be a potential barrier to exercise and PA and, as a result, a contributor to having a negative sense of self when active at secondary school.

In addition, individuals who are high in SPA are generally concerned with how others view their physique either because their bodies are objectively unattractive or because they hold unrealistic negative perceptions of their physique (Hausenblas, et al., 2004). Body concerns when engaged in PA at secondary school were evident in the findings, with one of the girls expressing her dislike of showing her tummy when in a swimming

costume. This has been found in previous research where presentation of their bodies was found to be a major demotivator to participating in swimming for adolescent girls (James, 2000). Similarly, in their focus groups findings, Whitehead and Biddle (2008) commented that appearance-related self-presentational concerns operated in various ways for less active girls aged 14-16 years. For example, being seen in a swimming costume also caused anxiety, particularly in front of boys and as a result, many of the girls reported avoided swimming altogether. Therefore, an awareness of possible self-presentational concerns of adolescent girls should be increased in individuals directly involved in PA participation (e.g. PE teachers and exercise leaders) to ensure an environment where such concerns cannot be heightened further.

Although feelings of body dissatisfaction emerged from the narrative interviews, comments on body concerns directly related to PA participation were sparse. However, interestingly the two girls who commented on a desire to lose weight had a greater body mass and BMI compared to the mean values for the study sub-sample. In addition, structural analysis findings highlighted that when the topic of physical changes during the transition from primary to secondary school was introduced into the narrative interview, for the majority of girls, the flow of their narratives halted. As such, a sense of being uncomfortable emerged, resulting in narrative silence. This finding is surprising considering adolescence is characterised by rapid changes to an individual's physical appearance which could enhance the salience of the physique to adolescent girls, yet it was apparent that direct discussion of these physical changes made the girls uncomfortable. Similar qualitative findings from individual interviews with early adolescent girls by Waldron (2007) have been shown, where changes in their perceptions of their physical appearance following a PA intervention programme were not discussed. The study findings and observations from Waldron (2007) would suggest that early adolescent girls are either unaware of their changes in body appearance at this time or reluctant to discuss perceived changes in appearance in an interview setting.

6.4.4 Individual Issues

Several of the emerging themes from both the past and present PA experiences of the girls were often only specific to one of the girls and were therefore grouped under the general dimension of individual issues.

Physical health facilitators/barriers

Increased energy levels was the only physical health facilitator to PA participation at primary school; however a lack of energy was consequently perceived as a negative aspect of their PA experiences at secondary school, a finding evident in previous research examining perceived barriers to PA among high school students (Allison, Dwyer & Makin, 1999). Similarly, Trost, et al. (1997) found that, particularly for girls, tiredness was related to a decrease in PA behaviour. This apparent shift in energy levels during the transition from primary to secondary school could be due to a number of factors, for example an increase in the length of the school day, a further commute to school and the energy cost of growing during the adolescent growth spurt (Malina, et al., 2004).

For the remaining overall themes relating to individual issues, these were only related to the negative aspects of the present PA experiences of the girls and therefore, cannot be contrasted with what the girls experienced in the past. However, a discussion of similar findings within the research literature is possible for a selection of the themes. In relation to the physical changes during adolescence, only one of the girls commented on how changes to her body influenced how she felt when running around at secondary school. The apparent lack of a maturational influence on PA behaviour in the majority of the narratives indicates that the most of the girls do not relate the physical changes associated with maturation to their PA behaviour at secondary school.

Alternative priorities

The issue of alternative priorities at secondary school for the girls predominantly consisted of having to do homework and working part-time jobs. Homework obligations in adolescent girls aged 12-14 years were also found to be negatively related to PA behaviour by Trost, et al. (1997). Similarly in their sportsotland report, Biddle, Coalter, et al. (2005) identified competing behaviours such as homework and chores that adolescent girls were pressured to do as barriers to being active. The present findings are also comparable to qualitative research by Mulvihill, et al. (2000) where perceived time pressure from homework emerged as a barrier to being active during the time of transition to secondary school.

Lack of time

It is apparent from both the present findings and previous research that alternative priorities at secondary school are related to a lack of time to be active. Girls will tend

to prioritise alternative activities in their available free time for PA, resulting in a decrease in the available spare time for PA participation. In adults, a perceived lack of time is frequently cited as the main barrier to PA (Biddle & Mutrie, 2008), a finding also evident for adolescents (Allison, et al., 1999). However, the findings suggest that this perceived lack of time for PA only started to increase as the girls moved to secondary school due to a combination of alternative priorities at secondary school and a general feeling of having more time to be active in primary school.

Summary

Overall the findings highlight that the transition from primary school to secondary school is associated with a number of issues relating to PA behaviour in adolescent girls. Firstly, the girls are not utilising the same opportunities for PA in secondary school as they were in primary school, for example at break time and lunch time and in their active travel to and from school. In addition, the girls reported a number of alternatives to PA now they are in secondary school, for example spending time with friends, shopping and going to the cinema.

Secondly, the environment the girls are in at secondary school appears to have changed in terms of the perceived amount of social support received from peers and parents. The findings suggest that at secondary school, peers provide the majority of the social support for PA yet if this was lacking, many of the girls stated that they would not participate altogether. Similarly, there was a shift in the girls feeling comfortable in their PA environment from primary to secondary school, where at secondary school they reported feeling less comfortable due to a more competitive and competent environment, coupled with less familiar surroundings for PA participation in PE.

Thirdly, the girls' sense of self appears to be less positive at secondary school through a lack of enjoyment, a lack of perceived competence, self-presentational concerns and an overall lack of enthusiasm or desire to be active. Furthermore, some of the factors associated with a negative sense of self when active appear to be exacerbated by the environment at secondary school. Finally, there were a number of individual issues that emerged from the girls' narratives that were influential on their PA behaviour. These include a lack of energy in secondary school, alternative priorities to being active, for example an increase in the amount of homework in secondary school and a perceived lack of time to be active. Overall it is apparent from the findings that PA behaviour in adolescent girls is complex and can be influenced by numerous factors which are both

relevant to the sample of early adolescent girls and those which are specific to each individual.

6.5 Using a narrative approach to explore the decrease in physical activity in adolescent girls: Methodological considerations

From the existing literature available, the potential role of using a narrative approach within sport and exercise psychology research continues to grow and develop. Although to date there is no known research exploring young people's narratives in sport and exercise psychology, Valentine (2000) advocates that children are able to create their own individual narrative and therefore using a narrative approach appeared to be a worthy research avenue to examine. The narrative approach involved conducting narrative interviews and using IPA and structural analysis to examine the narratives of the girls in-depth. The following discussion will outline the strengths and limitations of using a narrative approach to explore the decrease in PA in adolescent girls. An appropriate tool which can be used in order to learn and develop from a particular experience is the process of reflection (Anderson, et al., 2004). Reflecting on the experience of undertaking this study using a diary allowed identification of obstacles, subsequent solutions, strengths and shortcomings of a narrative approach.

A major methodological strength of using a narrative approach is it allowed the researcher to understand PA behaviour in adolescent girls from an individual viewpoint which is often lost when using more traditional forms of content-analysis. This provided the girls with a 'voice' which emanated from their stories and it became apparent that each girl had a different PA story to tell, particularly in the way they narrated it. Yardley (2000) emphasises that this type of approach creates, "a detailed and profound insight into a particular, perhaps unique, account or experience rather than a set of broad generalisations about commonalities between different people" (p. 36). Although the study only presented findings on the structural analysis of three of the girls' narratives, these were seen as being representative of the study sample and were therefore selected for comparison on this basis. Gaining such 'information-rich' data is a primary aim of narrative research (Crossley, 2000) which was to some extent fulfilled in this study. However, it is important to note that, transferring these specific, individual stories to allow a generalisation to all adolescent girls is problematic and as pointed out by Crossley (2000), narrative approaches do not work with the same concept of representativeness as quantitative methodology. Consequently, the

generalisability of the findings of the study to the population of adolescent girls is open to debate.

A second major strength of using a narrative approach was it allowed the girls to organise their PA experiences into past and present, resulting in a clear temporal flow throughout the narrative interview. It was hoped that through narrative the researcher would be able to gain an in-depth, personalised view of the individual's experience throughout both the transition from primary school to secondary school, coupled with the transition from childhood into adolescence. The narrative findings do suggest the author was able to gain unique insight into the girls' 'transition story' in relation to their PA behaviour. Overall, the narrative interview allowed all of the girls to elaborate on all aspects of their PA stories with the exception of talking about the physical changes that had happened since primary school, where narrative silences were common. Prior to conducting the narrative interviews, it was anticipated that considering stories are told about, in, out of and through the body, narrative inquiry would be an appropriate research avenue. More specifically, compared to a more traditional focus group setting where social embarrassment may deter girls from elaborating on such sensitive and personal issues, using narrative interviews would seem to be more fitting in this context. However, it emerged that even a one-to-one narrative interview was unable to tease out how the girls felt about the physical changes that had occurred since primary school and how this related to their PA behaviour. Therefore, a future research direction could be to develop more appropriate ways of eliciting this information, for example identifying established peer groups amongst adolescent girls and using these as a group setting for discussions.

The main difficulty encountered by the author during the study was the partial and often subjective guidance available within the literature as to the exact methodology preferred to achieve narrative analysis. Furthermore, the meaning of different narratives is not always apparent and can be approached in different ways by different researchers (Smith, 2003). Therefore, the author had to develop confidence in the methodological decisions that were taken and to develop an understanding that there was no such thing as perfect qualitative research and that this was part of the process when conducting qualitative research. However, Smith and Sparkes (2009a) do emphasise the urgent need to address narrative methods of analysis within narrative research, as it is an area lacking in clear direction. As such, future research in this area

needs to focus on developing more rigorous and comprehensible guidance on the methods of analysis available.

A final limitation of the study was the relatively short length of the narrative interviews with the girls compared to previous narrative research. For example, in a case study examining a disability through playing rugby by Smith and Sparkes (2008), the interview length was approximately three hours. Similarly, in a study exploring the experience of sporting mid-life with adults through narrative inquiry (Partington, et al., 2005), the interviews lasted approximately one hour. However, it is important to note that these studies had small sample sizes (e.g., one to three participants) compared to the current sample size of 14 girls and despite the relatively short interviews, the amount of data gathered was substantial. Furthermore, these previous studies focused on individual athletes who had a story to tell in relation to sport in their lives, whereas the girls of the present study were asked to talk about their PA participation and up until now the girls had never considered their decrease in PA directly and for some of the girls, PA was not a major priority in their lives.

In conclusion, using a narrative approach to explore the decrease in PA in adolescent girls allowed an in-depth and exclusive insight into the PA stories of this group of adolescent girls. Despite a common decrease in PA levels since primary school, by adopting a narrative approach it was evident that their PA stories were different. However, questions of ‘generality’ and ‘representativeness’ do arise from adopting this approach. Overall, it is concluded that using a narrative approach has enriched the understanding of the decrease in PA in this group of girls. Further research in both narrative methodology and narrative research in adolescent girls could enhance the potential role of narrative psychology in understanding the PA behaviours of adolescent girls.

6.6 Conclusion

Use of a narrative approach has allowed an extensive examination of the reasons for the decrease in PA in a selection of adolescent girls over the school transition period. The thematic and narrative findings could suggest that a change in the PA environment is central to understanding the decline in PA levels since primary school, as illustrated in Figure 6.2 below. A positive environment for the girls when participating in PA could be achieved by ensuring a choice of activities in PE, both traditional and non-

traditional. In addition, allowing a girls-only environment may reduce the focus on competence and competition, thus enhancing the positive PA environment. Finally, recognising the importance of social support in the form of friend involvement in PA will further contribute to a positive PA environment. Similar conclusions have been drawn by Barr-Anderson, et al. (2008) relating to the PE environment. The authors concluded that strategies worthy of further exploration include girl-only classes, non-competitive environments, providing different types of activities that are fun for girls with different skill levels and interests and skill-enhancing programs to increase self-efficacy.

As outlined in Figure 6.2 below, creating a more positive environment for the girls when participating in PA in secondary school may have a subsequent effect on increasing their sense of self when active. This could be achieved through the development of competence and task mastery in a supportive environment, coupled with positive reinforcement from significant others, as suggested in Harter's competence motivation theory (1978, 1982). An increase in perceived competence and a sense of mastery and achievement is likely to lead to increased enjoyment of PA and a reduction in self-presentational concerns. This can be compared to the identification of the importance of a 'positive psychology' by Biddle, Whitehead, et al. (2005), whereby ensuring all PA environments for adolescent girls allow for the development of self-improvement, choices and perceptions of confidence and competence. This is likely to lead to higher levels of enjoyment, increased physical self-worth and self-esteem.

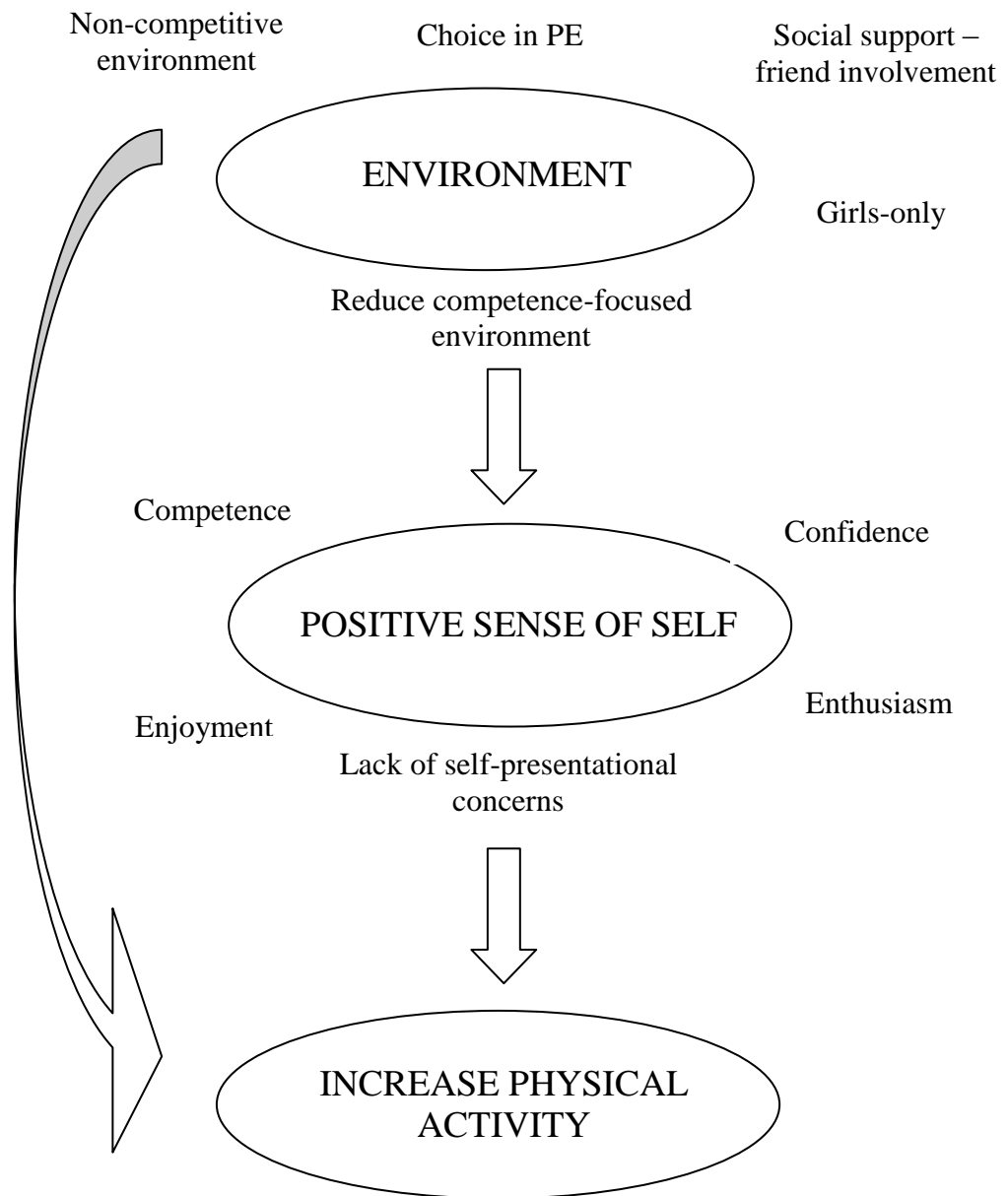


Figure 6.2: Proposed diagrammatic representation of the central role of the environment in increasing physical activity in adolescent girls

Biddle and Mutrie (2008) point out that an individualistic approach to understanding PA behaviour has dominated exercise psychology research in the past until recently where a broader perspective has been advocated to allow consideration of social and environmental factors. Therefore, as outlined in Figure 6.2, the findings would suggest that both the environment and the individual have an interactive and independent influence on PA. As such, interventions focused on creating a more positive PA environment may result in enhancing a positive sense of self which could eventually lead to an increase in PA behaviour in adolescent girls. The findings that PA in adolescent girls appears to be influenced by a combination of the environment and the individual also lend support to Bandura’s Social Cognitive Theory (SCT; 1986). The

underlying assumption of the SCT is that human behaviour is viewed as a triadic, dynamic and reciprocal interaction of personal factors, the environment and behaviour. SCT proposes that the initiation and maintenance of behaviour can be explained through examining the interaction of the environment, the individual and behaviour. Furthermore, the reciprocal nature of the interrelationships allows there to be variation in their proposed influence on behaviour dependant on the circumstance. In relation to the transition from primary school to secondary school, the findings suggest that the environment appears to be more effectual than personal factors at this particular point in time. Therefore, interventions adopting a social-cognitive approach targeting the environment aspect within the SCT framework may be more effective in changing PA behaviour in adolescent girls during the school transition.

This study has examined the reasons for the decrease in PA in a selection of adolescent girls over the school transition period using a narrative approach. The findings of the study support previous research in this area (Sallis, et al., 2000; Biddle, Whitehead, et al., 2005) highlighting that there are a number of variables (demographic; biological; psychological; behavioural; social and cultural and physical environment) associated with PA behaviour in adolescent girls and subsequently contributes towards the advancement of knowledge in understanding PA behaviour in early adolescent girls. However, it is important to note that the findings are based on adolescent girls whose decrease in PA levels were most marked from primary school to secondary school and are therefore probably not representative of adolescent girls who are still active in secondary school. Further research could examine the PA behaviour of adolescent girls who remain relatively active during the transition from primary school to secondary school to ascertain whether there are any differences in variables influencing their PA behaviour compared with low active adolescent girls. Finally, by adopting a narrative approach, this study has made a positive contribution to the development of this research approach, particularly considering there are no known studies which have used a narrative approach with the population sample of adolescent girls.

CHAPTER 7: CONCLUSIONS, PRACTICAL RECOMMENDATIONS AND FUTURE RESEARCH DIRECTIONS

7.1 Introduction

This chapter begins by summarising the quantitative and qualitative findings from studies one and two and discussing these findings in relation to the original aims of the research and their contribution to the literature. In light of the research findings, practical recommendations for tackling physical inactivity in adolescent girls, particularly during the school transition period, are made and potential future research directions in this area are suggested. The chapter concludes with a personal reflection on the research experience.

7.2 Revisiting the original research aims: Study one

The detailed literature review in Chapters 2 and 3 identified that there was a gap in the research examining how maturation could directly affect physical activity (PA) behaviour and how maturity-related decreases in physical self-perceptions may influence the documented decrease in PA in adolescent girls. This was identified in the overall research aims in Chapter 3 and is visually represented in Figure 7.1.

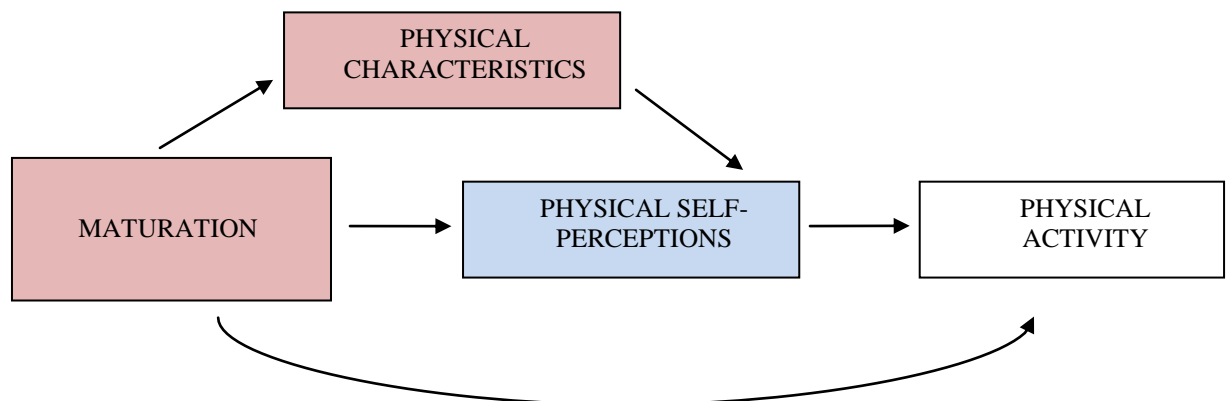


Figure 7.1: Visual representation of the proposed direct and indirect influence of maturation, the physical characteristics associated with maturation and physical self-perceptions on physical activity

Study one focused on examining the relationship between maturation, physical self-perceptions and PA in early adolescents girls and the influence of maturation on PA and physical self-perceptions in adolescent girls during the transition from primary school

to secondary school over 12 months. In light of the original aims of the study, as outlined in Chapter 3, four main conclusions emerged.

Firstly, the findings support research highlighting a decrease in PA in adolescent girls (e.g., Kimm, et al., 2002; Bromley, et al., 2003), particularly in relation to research demonstrating a decrease in PA during the transition from primary school to secondary school (e.g., Gidlow, et al., 2007). Furthermore, the findings highlighted that as the girls moved from primary school to secondary school, the decrease in PA was during break-time, lunch-time and immediately after school. Interestingly, PA during physical education (PE) lessons increased during this transition. Therefore, periods where PA behaviour is optional during the school day appear to be contributing to the decrease in PA during the transition in schools. Yet to date no known research has explored this concept in detail and these findings suggest it could be an important area for future research.

Secondly, over the 12 months the girls advanced in maturational status yet the findings showed that maturation and the physical changes associated with maturation had no direct influence on the decrease in PA, a finding which adds support to recent research in older adolescent girls (Wickel & Eisenmann, 2007). On the other hand, the findings contradict recent research by Baker, et al. (2007) who identified that early maturation relative to peers could lead to a decline in PA in adolescent girls. The examination of the influence of maturation relative to peers on PA behaviour in early adolescent girls may be a focus for future research.

Thirdly, it was hypothesised that an advancement in maturational status over the 12 months and the physical characteristics associated with this would influence the decrease in physical self-perceptions. However, the longitudinal findings demonstrated that maturational status had a limited influence on the change in physical self-perceptions despite cross-sectional findings from Phase 1 (primary school) indicating that perceptions of body attractiveness and physical self-worth were less positive in the more mature girls in primary school. In addition, findings from study one did show that an increase in the physical characteristics associated with maturation of body mass and sum of skinfolds accounted for a small proportion of the change in perceptions of body attractiveness and physical self-worth. However, overall the findings suggest that although maturation may not have a direct influence on physical self-perceptions

longitudinally, the increase in body mass normally associated with maturation could be associated with aspects of the physical self becoming less positive in adolescent girls.

Finally, in line with previous research, physical self-perceptions were positive correlates of PA in adolescent girls at both primary school and secondary school. However, perceptions of sport competence, physical condition, body attractiveness and physical self-worth were less positive after 12 months, adding support to research examining changes in physical self-perceptions during adolescence (e.g. Crocker, et al., 2003; Crocker, et al., 2006). Specifically, perceptions of body attractiveness and physical self-worth were significantly less positive over the 12 months in early adolescent girls. Furthermore, the findings highlighted that these changes in physical self-perceptions accounted for a small proportion of the decrease in PA. Although this finding is consistent with previous research longitudinally examining the relationship between PA and physical self-perceptions in older adolescents, to the author's knowledge, this is the first study to focus on this in early adolescent girls.

Overall the findings of study one successfully advance the research knowledge in the area of PA behaviour in adolescent girls by examining the influence of maturation, physical characteristics and physical self-perceptions on PA. Furthermore, monitoring the changes in these variables over the transition from primary school to secondary school in early adolescent girls was an area where there was an identifiable gap in the research knowledge. It is deemed that study one has been successful in addressing this gap and extending the research in this area, particularly by focusing on early adolescent girls and investigating in detail where the change in PA occurs during the transition in schools. Overall findings from study one highlighted that the decrease in PA during the transition from primary school to secondary school was only partially influenced by certain psychological and biological variables and it was apparent that further research was needed to explore the influence of additional variables.

7.3 Revisiting the original research aims: Study two

Guided by the findings of study one, it was decided to explore in-depth the underlying reasons for the decrease in PA from primary school to secondary school in a sample of the girls by adopting a narrative approach. Three main conclusions can be drawn from study two in relation to the findings, which will be discussed in conjunction with the methodological decisions taken throughout the study.

Firstly the findings suggested that as the girls moved from primary school into secondary school a range of factors play an important role in understanding their decrease in PA. Furthermore, the findings indicated that the PA environment had an impact on their sense of self with regards to levels of enjoyment, perceived competence, confidence and self-presentation issues. These findings support the current research trend towards a focus on the environment the individual is experiencing rather on the individual (e.g. Biddle & Mutrie, 2008; Bar-Anderson, et al., 2008) and its impact on the self and the resulting influence on the individual's PA behaviours.

A second conclusion which can be drawn from the emergent findings of study two was the apparent lack of maturational influence on the decrease in PA in this group of girls. Even in instances during the narrative interviews where the girls were probed to talk about the physical changes that had happened since primary school they were not only reluctant to discuss these but there was limited evidence of these physical changes influencing their PA behaviour or choices. This adds support to the quantitative findings of study one where maturation and the physical changes associated with maturation had no influence on the evident decrease in PA.

Finally, by adopting a narrative approach, a unique insight into the PA stories of the girls as they moved from primary school into secondary school was gained which resulted in a large amount of 'information-rich' data (Crossley, 2000). As a result, such detailed qualitative findings add to the existing literature examining the factors influencing PA behaviour in adolescent girls (e.g., Sallis, et al., 2000; Biddle, Whitehead, et al., 2005). It is apparent from the qualitative findings that both the individual and the environment need to be considered when examining PA behaviour in adolescent girls during the transition from primary school to secondary school. Furthermore, previous qualitative research exploring PA behaviour in adolescent girls have predominantly used focus groups or semi-structured interviews to gather their data, therefore to the author's knowledge, this is the first study to adopt a narrative approach to understanding PA behaviour in adolescent girls.

7.4 Summary of thesis findings

The move from primary school to secondary school resulted in a decrease in PA and physical self-perceptions in early adolescent girls. In addition, the decrease in PA was

predominantly evident during break-time, lunch-times and immediately after school and not during PE lessons. Maturation and the physical characteristics of maturation had no direct influence on the decrease in PA, yet the decrease in PA was partially accounted for by the change in physical self-perceptions. Although maturation had no influence on physical self-perceptions, the change in perceptions of body attractiveness and physical self-worth were partially accounted for by an increase in body mass and sum of skinfolds. An in-depth exploratory study using narrative interviews revealed that the change in the PA environment from primary school to secondary school played a central role in understanding PA behaviour through its influence on the girls' sense of self when active and the resulting impact on PA. Although the quantitative study indicated that there were no significant decreases in perceptions of competence over the 12 months, the majority of the 14 girls whose decrease in PA was most marked during the transition between schools expressed a lack of competence in PA settings, particularly when compared to their peers. Therefore, overall the findings suggest that PA behaviour in early adolescent girls may depend more on perceived competence and ability in a particular environment rather than the influence that the physical changes accompanying maturation may have on perceived competence and ability.

7.5 Practical recommendations

The collective findings of studies one and two can be used to suggest practical recommendations and inform the development of more effective intervention programmes to minimise the decrease in PA as girls move from primary school to secondary school. However, it is important to note that these recommendations are made with an aim to increase PA behaviour in girls who demonstrate a decrease in PA levels during the school transition. As pointed out in the previous chapter, there are girls who maintained their PA behaviour during the move from primary school to secondary school and for these girls, the practical recommendations suggested may not be appropriate. The practical recommendations suggested below also highlight the difficulty PE staff in schools face when trying to accommodate those girls who enjoy involvement in competitive and competent mixed-team sports and those individuals who prefer girls-only activities where the focus is on participation and development of skills relative to the individual. Therefore, although these recommendations are evidence-based, the feasibility and practicality of implementing all of these recommendations into the school environment is difficult and an area where the links between evidence and implementation is still lacking.

Overall an increase in the awareness of the potential impact of the environment on PA behaviour in adolescent girls is essential and this should be supported by measures to create a more supportive PA environment, both in structured PE lessons and during periods of optional PA throughout the school day (e.g., break-times, lunch-times, after-school). Although the majority of schools already recognise that the change in the PA environment could be fundamental to understanding the decline in PA as girls enter secondary school, these findings can be used where possible to provide specific intervention areas to increase PA in schools.

Firstly, developing communication and collaborative links between the PE departments of primary and secondary schools could ensure that the stark contrast between the PE environments of primary seven and the first year of secondary school is reduced. This could be achieved by introducing more competence and skill based activities into the PE curriculum in primary seven where the girls can develop these in an existing supportive and familiar environment with an aim to transfer these existing skills and levels of competence into their new PA environment in secondary school. In addition, offering similar extra-curricular activities at both primary school and secondary school may increase the chance of girls continuing PA participation in activities from primary school into secondary school.

Secondly, sensitivity to the physical changes during adolescence and understanding how these may impact on the girls' perceived competence, confidence and self-presentational concerns in their PA environments could be adopted by PE teachers and staff. Consideration of allowing for a girls-only environment in certain activities, for example swimming and gymnastics, is a possible way of creating a supportive environment for PA and thus increasing the likelihood of PA participation.

Thirdly, a reduction in the focus on competition in PE lessons and shifting the focus on emphasising participation could also contribute towards creating a supportive PA environment. Furthermore, allowing a girls-only PA environment could reduce the competitiveness within the environment resulting in increased levels of enjoyment. Also an understanding of the important role peer support and peer influence has on PA participation in girls is essential. Allowing girls to work with their friends in PE lessons and gain social support in their PA may be more effective than grouping girls by class registration groups or ability levels. Finally, it is important for schools to

understand the social and cultural changes that occur during the transition between primary and secondary schools, particularly regarding PA behaviour at break-time and lunch-times. Examining peer groups and social norms within these groups may help to increase PA behaviour in girls during these optional periods for PA.

It is important to note that the creation of a supportive PA environment in secondary school needs to be co-ordinated at all levels of the surrounding environment, from the immediate level of the PE teachers right through to policy makers and national governments. Implementing these suggested measures requires decisions that can only be made at a local and national government level and need to be made in light of financial implications. Therefore, local and national governments might be encouraged to further address the importance of the PA environment in secondary school and its role in understanding the decrease in PA in early adolescent girls when developing future policies and PA strategies.

With regards to informing intervention strategies to increase PA in early adolescent girls, the findings would suggest that programmes focused on developing perceptions of competence and confidence in a supportive PA environment could be most effective. As highlighted in the suggestions for practical recommendations, this would require a multi-dimensional approach within the school, by combining strategies at the individual level, the environment level and the policy level, with a particular focus on the transition between primary school and secondary school. This contention supports findings in a recent review of the effectiveness of interventions to promote PA in children and adolescents (van Sluijs, McMinn & Griffin, 2007). Emerging from their findings was strong evidence supporting the effect of multi-component interventions in adolescents, which is inclusive of an educational component, an environmental component and a policy component.

7.6 Future research directions

A number of potential avenues for future research have emerged from the research findings of this thesis. Firstly, in relation to the population sample of early adolescent girls in Edinburgh, Scotland, it is possible that future studies would benefit from extending the research to different geographical areas with a possibility of comparing socio-economic status and PA. In addition, although the decrease in PA during adolescence is more marked in girls than boys, there is also a steady decline in PA in

boys during adolescence. Moreover, the onset of maturation in boys usually occurs approximately 2 years after girls (Malina, et al., 2004), therefore an examination of the influence of maturation on the physical self and the relationship with PA in adolescent boys is an area which warrants future research, particularly with the scope to examine gender-related differences in this area.

Several avenues for future research have emerged from study one, predominantly through identification of methodological limitations. Although one of the main strengths of this thesis was the longitudinal examination of changes in PA, physical characteristics, maturation and physical self-perceptions, data were only obtained over a 12 month period. In this time, the majority of girls were only partially through the maturational process, therefore it is difficult to assess whether the physical changes that accompany maturation will have fully developed and subsequently have an influence on the physical self and PA. As such, future research in this area should consider a greater number of data time points through adolescence.

Due to the relatively large sample size of study one, a subjective measure was used to assess PA behaviour (Physical Activity Questionnaire for Children - PAQ-C; Crocker, et al., 1997) which increased the likelihood of social desirability responses being given and questions the accuracy of recall of the information. Therefore, future research should contemplate using an objective measure of PA to compliment the subjective measure, to add to the research findings. Similarly, maturation was assessed using the self-report PDS (Petersen, et al., 1988), a subjective measure of maturational status. Therefore, in line with previous research in this area (Baker, et al., 2007), researchers should endeavour to combine subjective and objective methods to ascertain an overall index of maturational status.

It was also apparent from further investigation of the change in PA over the school transition that periods of optional PA throughout the school day (break-times, lunch-times and immediately after-school) were contributing to the decrease in PA evident. To date there is no known research comparing PA behaviour in specific segments of the school day during the transition from primary school to secondary school and the findings suggest that further research could examine these periods in more detail. This could help to understand why these periods of the school day are most susceptible to a decrease in PA behaviour in early adolescent girls over the school transition.

Research directions evolving from study two include further use of adopting a narrative approach in qualitative research aimed at understanding PA behaviour. Although narrative research is a relatively recent addition in the area of sport and exercise psychology, it has shown to be a successful and innovative way of gaining an in-depth insight into the PA ‘stories’ of adolescent girls which could be used effectively in future research in this area. In addition, conclusions drawn from the findings of study two point towards a need for research to examine the impact of the PA environment, particularly within the school and the change in the environment during the transition between primary and secondary school. This is supported by recent comments by Ferreira, et al. (2007) who suggest that aspects of a school’s physical, socio-cultural, economic or political environment remain relatively unexplored in the literature aimed at understanding adolescent PA participation. Consequently, this is a potential research direction that warrants further investigation in order to advance our understanding of PA behaviour in adolescent girls. Finally, additional intervention-based research focused on reducing the impact of the change in environment during the transition between primary school and secondary school is an area which seems to have been neglected in past intervention studies and is therefore worthy of future research attention.

7.7 The research experience

During my research experiences I have encountered numerous personal challenges, as a researcher and as an individual. One of the major lessons learnt early on in my PhD was that research never goes to plan, it is unpredictable and can often lead to feelings of frustration. From this I have learnt to be adaptable when things don’t go to plan and to embrace the changeable nature of research in my approach to conducting research and to some extent in my personal nature. Through my research I have also developed an awareness and understanding that intense involvement in a specific research area for a substantial amount of time inevitably leads to a degree of subjectivity. Subsequently, several steps were taken to ensure reliability and validity in the quantitative findings and a sense of trustworthiness in the qualitative findings of this thesis.

Previous to undertaking this PhD, the majority of my research experience oriented towards a positivistic approach, collecting, analysing and interpreting quantitative data. Consideration and subsequent utilisation of a naturalistic form of inquiry by adopting a narrative approach has allowed me to develop as a researcher in both understanding

and challenging the theoretical assumptions of qualitative research and the collection, analysis and interpretation of qualitative data.

On reflection, progression through the research experience over the past four years has allowed me to grow as an independent and confident researcher. Subsequently, I have developed an increased level of trust and belief in the research decisions and directions I have taken throughout the research experience, particularly during the latter stages where my research adopted a narrative approach. Finally, the research experience has also provided me with the opportunity to explore and establish where my research interests lie, how and why I want to pursue these interests. I finish this thesis in the hope that my academic journey will continue in the positive, enjoyable and unpredictable manner I have experienced thus far.

REFERENCES

- Aaron, D. J., Storti, K. L., Robertson, R. J., Kriska, A. M. & LaPorte, R. E. (2002). Longitudinal study of the number and choice of leisure time physical activities from mid to late adolescence: Implications for school curricula and community recreation programs. *Archives of Pediatric Adolescent Medicine*, 156(11), 1075-1080.
- Ainsworth, B. E., Haskell, W. L., Leon, A. S., Jacobs, D. R., Montoye, H. J., Sallis, J. F., et al. (1993). Compendium of physical activities: classification of energy costs of human physical activities. *Medicine and Science in Sports and Exercise*, 25(1), 71-80.
- Allender, S., Cowburn, G. & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research*, 21(6), 826-835.
- Allender, S., Foster, C., Scarborough, P. & Rayner, M. (2007). The burden of physical activity-related ill health in the UK. *Journal of Epidemiology and Community Health*, 61, 344-348.
- Allison, K. R., Dwyer, J. J. & Makin, S. (1999). Perceived barriers to physical activity among high school students. *Preventive Medicine*, 28(6), 608-615.
- Alsaker, F. (1992). Pubertal timing, overweight and psychological adjustment. *Journal of Early Adolescence*, 12, 396-419.
- Altintas, A., & Asci, F. H. (2008). Physical self-esteem of adolescents with regard to physical activity and pubertal status. *Pediatric Exercise Science*, 20(2), 142-156.
- American Diabetes Association (2000). Type 2 diabetes in children and adolescents. *Pediatrics*, 105, 671-680.
- Ames, C. (1992). Achievement goals, motivational climate, and motivational processes. In G. C. Roberts (Ed), *Motivation in sport and exercise*. Champaign, IL: Human Kinetics.
- Anderson, A. G., Knowles, Z. & Gilbourne, D. (2004). Reflective practice for sport psychologists: Concepts, models, practical implications, and thoughts on dissemination. *Sport Psychologist*, 18(2), 188-203.

- Armstrong, N., Balding, J., Gentle, P. & Kirby, B. (1990). Patterns of physical activity among 11 to 16 year old British children. *British Medical Journal*, 301(6745), 203-205.
- Armstrong, N. & Welsman, J. (1997). *Young people and physical activity*. Oxford: Oxford University Press.
- Armstrong, N. & Welsman, J. R. (2006). The physical activity patterns of European youths with reference to methods of assessment. *Sports Medicine*, 36(12), 1067-1086.
- Ashworth, P. (2003). The origins of qualitative psychology. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods*. London: Sage.
- Bailey, R. C., Olson, J., Pepper, S. L., Porszasz, J., Barstow, T. J., & Cooper, D. M. (1995). The level and tempo of children's physical activities: An observational study. *Medicine and Science in Sports and Exercise*, 27(7), 1033-1041.
- Bailey, D., McKay, H., Mirwald, R., Crocker, P. & Faulkner, R. (1999). A six year longitudinal study of the relationship of physical activity to bone mineral accrual in growing children: The University of Saskatchewan bone mineral accrual study. *Journal of Bone and Mineral Research*, 14(10), 1672-1679.
- Baker, B. L., Birch, L. L., Trost, S. G., & Davison, K. K. (2007). Advanced pubertal status at age 11 and lower physical activity in adolescent girls. *The Journal of Pediatrics*, 151(5), 488-493.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behaviour change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Baranowski, T., Anderson, C. & Carmack, C. (1998). Mediating variable framework in physical activity interventions. How are we doing? How might we do better? *American Journal of Preventive Medicine*, 15(4), 266-297.
- Barr-Anderson, D. J., Neumark-Sztainer, D., Schmitz, K. H., Ward, D. S., Conway, T. L., Pratt, C., et al. (2008). But I like PE: Factors associated with enjoyment of physical education class in middle school girls. *Research Quarterly for Exercise and Sport*, 79(1), 18-27.

- Bauman, A. E., Sallis, J. F., Dzewaltowski, D. A. & Owen, N. (2002). Toward a better understanding of the influences on physical activity: The role of determinants, correlates, causal variables, mediators, moderators, and confounders. *American Journal of Preventive Medicine*, 23(2 Suppl), 5-14.
- Bauman, A., Sallis, J. F. & Owen, N. (2002). Environmental and policy measurement in physical activity research. pp. 241-251 In G. J. Welk (Ed.), *Physical activity assessments for health-related research*. Champaign, IL: Human Kinetics.
- Baumeister, R. & Newman, L. (1994). How stories make sense of personal experiences: Motives that shape autobiographical narratives. *Personality and Social Psychology Bulletin*, 20, 676-690.
- Baxter-Jones, A. G. & Sherar, L. B. (2007). Growth and maturation. In N. Armstrong (Ed.), *Pediatric exercise physiology*: Churchill Livingstone.
- Berkley, C., Rockett, H., Gillman, M. & Colditz, G. (2003) One-Year Changes in Activity and in Inactivity Among 10- to 15-Year-Old Boys and Girls: Relationship to Change in Body Mass Index. *Pediatrics*, 11(4), 836-843.
- Biddle, S. A., Page, B., Ashford, D., Jennings, R., Brooke, R. & Fox, K. R. (1993). Assessment of children's self-perceptions. *International Journal of Adolescence and Youth*, 4, 93-109.
- Biddle, S. J. (1997). Cognitive theories of motivation and the physical self. In K. R. Fox (Ed.), *The physical self: From motivation to well-being*. Champaign, IL: Human Kinetics.
- Biddle, S. J. (2007). Sedentary behaviour. *American Journal of Preventive Medicine*, 33(6), 502-504.
- Biddle, S. J., Cavill, N. & Sallis, J. F. (1998). Policy framework for young people and health-enhancing physical activity. In S. Biddle, J. F. Sallis & N. Cavill (Eds.), *Young and active? Young people and health-enhancing physical activity: evidence and implications*. (pp. 3-16). London: Health Education Authority.
- Biddle, S. J., Coalter, F., O'Donovan, T. M., MacBeath, J., Nevill, M. E. & Whitehead, S. H. (2005). *Increasing demand for sport and physical activity by girls* (Report No. 100). Edinburgh, sportscotland.

- Biddle, S. J., Gorely, T. & Stensel, D. J. (2004). Health-enhancing physical activity and sedentary behaviour in children and adolescents. *Journal of Sports Science*, 22(8), 679-701.
- Biddle, S. J. & Mutrie, N. (2008). *Psychology of physical activity: Determinants, well-being and interventions* (2nd ed.). London: Routledge.
- Biddle, S. J. & Wang, C. K. (2003). Motivation and self-perception profiles and links with physical activity in adolescent girls. *Journal of Adolescence*, 26(6), 687-701.
- Biddle, S. J., Whitehead, S. H., O'Donovan, T. M. & Nevill, M. E. (2005). Correlates of participation in physical activity for adolescent girls: A systematic review of recent literature. *Journal of Physical Activity and Health*, 2, 423-434.
- Bitar, A., Fellmann, N., Vernet, J., Coudert, J. & Vermorel, M. (1999). Variations and determinants of energy expenditure as measured by whole-body indirect calorimetry during puberty and adolescence. *American Journal of Clinical Nutrition*, 69, 1209-1216.
- Bond, L., Clements, J., Bertalli, N., Evans-Whipp, T., McMorris, B. J., Patton, G. C., et al. (2006). A comparison of self-reported puberty using the Pubertal Development Scale and the Sexual Maturation Scale in a school-based epidemiologic survey. *Journal of Adolescence*, 29(5), 709-720.
- Boreham, C. & Riddoch, C. (2001). The physical activity, fitness and health of children. *Journal of Sports Science*, 19(12), 915-929.
- Bouchard, C. & Depress, J. P. (1995). Physical activity, fitness and health: Atherosclerotic, metabolic and hypertensive diseases. *Research Quarterly for Exercise and Sport*, 66, 268-275.
- Bracken, B. (1996). Clinical applications of a context-dependent multidimensional model of self-concept. In B. Bracken (Ed.), *Handbook of self-concept* (pp. 463-505). New York: Wiley.
- Bradley, C. B., McMurray, R. G., Harrell, J. S. & Deng, S. (2000). Changes in common activities of 3rd through 10th graders: the CHIC study. *Medicine and Science in Sports and Exercise*, 32(12), 2071-2078.
- Bratteby, L. E., Sandhagen, B., Fan, H. & Samuelson, G. (1997). A 7-day activity diary for assessment of daily energy expenditure validated by the doubly labelled water method in adolescents. *European Journal of Clinical Nutrition*, 51(9), 585-591.

- Brettschneider, W. & Heim, R. (1997). Identity, sport and youth development. In K. R. Fox (Ed.), *The Physical self: From motivation to well-being*. (pp. 205-228): Human Kinetics.
- Brodersen, N. H., Steptoe, A., Boniface, D. & Wardle, J. (2007). Trends in physical activity and sedentary behaviour in adolescence: ethnic and socioeconomic differences. *British Journal of Sports Medicine*, 41(3), 140-144.
- Brodersen, N. H., Steptoe, A., Phil, D., Williamson, S. & Wardle, J. (2005). Socio-demographic, developmental, environmental and psychological correlates of physical activity and sedentary behaviour at age 11 and 12. *Annals of Behavioural Medicine*, 29(1), 2-11.
- Bromley, C., Chaudhury, M., Craig, R., Deverill, C., Erens, B., Fuller, E., et al. (2003). *Scottish Health Survey: Children's Report*. Scottish Executive, Edinburgh.
- Brooks-Gunn, J., & Warren, M. P. (1985). Measuring physical status and timing in early adolescence: A developmental perspective. *Journal of Youth and Adolescence*, 14(3), 163-189.
- Brooks-Gunn, J., Warren, M. P., Rosso, J. & Gargiulo, J. (1987). Validity of self-report measures of girls' pubertal status. *Child Development*, 58(3), 829-841.
- Bruner, J. (1990). *Acts of meaning*. Cambridge, MA: Harvard University Press.
- Burr, V. (1995). *An introduction to social constructionism*. London: Routledge.
- Burton, D., & Martens, R. (1986). Pinned by their own goals: An exploratory investigation into why kids drop out of wrestling. *Journal of Sport Psychology*, 8, 183-197.
- Calfas, K. & Taylor, W. C. (1994). Effects of physical activity on psychological variables in adolescents. *Pediatric Exercise Science*, 64(4), 406-423.
- Cameron, N. (2002). Assessment of maturation. In N. Cameron (Ed.), *Human growth and development* (pp. 363-382). San Diego: Academic Press.
- Campbell, R. N. (1984). *The new science: self-esteem psychology*. Lanham, MD: University Press of America.
- Carroll, B. & Loumidis, J. (2001). Children's perceived competence and enjoyment in physical education and physical activity outside school. *European Physical Education Review*, 7(1), 24-43.

- Carskadon, M. A. & Acebo, C. (1993). A self-administered rating scale for pubertal development. *Journal of Adolescent Health, 14*(3), 190-195.
- Caspersen, C. J., Pereira, M. A. & Curran, K. M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine and Science in Sports and Exercise, 32*(9), 1601-1609.
- Chanal, J. P., Marsh, H. W., Sarrazin, P. G. & Bois, J. E. (2005). Big-Fish-Little-Pond Effects on gymnastics self-concept: Social comparison processes in a physical setting. *Journal of Sport and Exercise Psychology, 27*(1), 53-70.
- Chase, S. E. (1995). *Ambiguous empowerment: The work narratives of women school superintendents*. Amherst: University of Massachusetts Press.
- Coakley, J. & White, A. (1992). Making decisions: Gender and sport participation among British adolescents. *Sociology and Sport Journal, 9*, 20-35.
- Cobley, P. (2001). *Narrative*. London: Routledge.
- Cockburn, C. & Clarke, G. (2002). "Everybody's looking at you!": Girls negotiating the "femininity deficit" they incur in physical education. *Womens Studies International Forum, 25*, 651-655.
- Cohen, J. (1969). *Statistical power for the behavioural sciences* (2nd ed.). New York: Academic Press.
- Coleman, J. C. & Hendry, L. (1992). *The Nature of Adolescence* (2nd ed.). London: Routledge.
- Coyle, A. (2007). Introduction to qualitative research. In E. Lyons & A. Coyle (Eds.), *Analysing qualitative data in psychology*. London: Sage publications.
- Crocker, P. R., Bailey, D. A., Faulkner, R. A., Kowalski, K. C. & McGrath, R. (1997). Measuring general levels of physical activity: preliminary evidence for the Physical Activity Questionnaire for Older Children. *Medicine and Science in Sports and Exercise, 29*(10), 1344-1349.
- Crocker, P. R., Eklund, R. C. & Kowalski, K. C. (2000). Children's physical activity and physical self-perceptions. *Journal of Sports Sciences, 18*(6), 383-394.
- Crocker, P., Sabiston, C., Forrester, S., Kowalski, N., Kowalski, K. & McDonough, M. (2003). Predicting change in physical activity, dietary restraint, and physique anxiety in adolescent girls: examining covariance in physical self-perceptions. *Canadian Journal of Public Health, 94*(5), 332-337.

- Crocker, P., Sabiston, C., Kowalski, K., McDonough, M. & Kowalski, N. (2006). Longitudinal assessment of the relationship between physical self-concept and health-related behaviour and emotion in adolescent girls. *Journal of Applied Sport Psychology*, 18, 185-200.
- Crossley, M. (2000). *Introducing narrative psychology: self, trauma and the construction of meaning*. Buckingham Open University Press.
- Currie, C., Elton, R., Todd, J. & Platt, S. (1997) Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children Survey. *Health Education Research*, 12(3), 385-397.
- Currie, C., Roberts, C., Morgan, A., Smith, R., Settertobulte, W., Samdal, O., et al. (2004). *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. World Health Organisation.
- Czarniawski, B. (2004). *Narratives in social science research*. London: Sage.
- Davison, K. K., Susman, E. J. & Birch, L. L. (2003). Percent body fat at age 5 predicts earlier pubertal development among girls at age 9. *Pediatrics*, 111(4 Pt 1), 815-821.
- Davison, K. K., Werder, J. L., Trost, S. G., Baker, B. L. & Birch, L. L. (2007). Why are early maturing girls less active? Links between pubertal development, psychological well-being, and physical activity among girls at ages 11 and 13. *Social Science and Medicine*, 64(12), 2391-2404.
- Dension, J. (1996). Sport Narratives. *Qualitative Inquiry*, 2(3), 351-362.
- Department of Health (2004). *At least five a week: Evidence on the impact of physical activity and its relationship to health*. Department of Health, UK.
- Dishman, R. (2006). Measurement of physical activity. In Poon, L., Chodzko-Zajko, W. & Tomporowski, P. (Eds), *Active living, cognitive function and aging*. Human Kinetics.
- Dishman, R., Sallis, J. & Orenstein, D. (1985). The determinants of physical activity and exercise. *Public Health Reports*, 100(2), 158-171.
- Dixon-Woods, M. & Fitzpatrick, R. (2001). Qualitative research in systematic reviews. Has established a place for itself. *British Medical Journal*, 323(7316), 765-766.

- Dorn, L. D., Dahl, R. E., Woodward, H. R. & Biro, F. (2006). Defining the boundaries of early adolescence: A user's guide to assessing pubertal status and pubertal timing in research with adolescents. *Applied Developmental Science, 10*(1), 30-56.
- Douglas, K. & Carless, D. (2006). Performance, discovery and relational narratives among women professional tournament golfers. *Women in Sport and Physical Activity Journal, 15*(2), 14-27.
- Drake, A. J., Smith, A. L., Betts, P. R., Crowne, E. C. & Shield, J. P. (2002). Type 2 diabetes in obese white children. *Archives of Disease in Childhood, 86*, 207-208.
- Dubas, J. S., Graber, J. A. & Peterson, A. C. (1991). A Longitudinal Investigation of Adolescents' Changing Perceptions of Pubertal Timing. *Developmental Psychology, 27*(4), 580-586.
- Dweck, C. (1986). Motivational processes affecting learning. *American Psychologist, 41*, 1040-1048.
- Dwyer, J. J., Allison, K. R., Goldenberg, E. R., Fein, A. J., Yoshida, K. K. & Boutilier, M. A. (2006). Adolescent girls' perceived barriers to participation in physical activity. *Adolescence, 41*(161), 75-89.
- Eakin, P. J. (1999). Autobiography and the value structures of ordinary experience: Marianne Gullestad's Everyday Life Philosophers. In R. Josselson & A. Lieblich (Eds.), *Making meaning of narratives* (pp. 25-43). Thousand Oaks, CA: Sage Publications, Inc.
- Eaton, K., Kann, L., Kinchen, S., Shanklin, S., Ross, J., Hawkins, J., et al. (2007). Youth Risk Behavior Surveillance. *Morbidity and Mortality Weekly Report, 57* (SS-4).
- Eccles, J. S. (1999). The development of children ages 6 to 14. *The Future of Children, 9*, 30-44.
- Edwards, D. (1995). Sacks and psychology. *Theory and Psychology, 5*(3), 579-597.
- Eklund, R. C., Whitehead, J. R. & Welk, G. J. (1997). Validity of the children and youth physical self-perception profile: a confirmatory factor analysis. *Research Quarterly for Exercise and Sport, 68*(3), 249-256.
- Elliott, R., Fischer, C. & Rennie, D. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British Journal of Clinical Psychology, 38*, 215-229.
- Elliott, J. (2005). *Using narratives in social research*. London: Sage.

- Epstein, S. (1973). The self-concept revisited. Or a theory of a theory. *American Psychologist*, 28(5), 404-416.
- Erikson, E. (1959). Identity and the life cycle. *Psychological Issues*, 1, 1-171.
- Evenson, K. R., Huston, S. L., McMillen, B. J., Bors, P. & Ward, D. S. (2003). Statewide prevalence and correlates of walking and bicycling to school. *Archives of Pediatrics and Adolescent Medicine*, 157(9), 887-892.
- Fairclough, S. (2003). Physical activity, perceived competence and enjoyment during high school education. *European Physical Education Review*, 8, 5-18.
- Fairclough, S. & Stratton, G. (2000). Physical education curriculum and extra-curriculum time as a consequence of the relaxed physical education orders and the National Literacy Strategy: a survey of primary schools in the north-west of England. *Journal of Sport Pediatrics*, 6, 73-90.
- Fairclough, S. & Stratton, G. (2005). Physical activity levels in middle and high school physical education: A review. *Pediatric Exercise Science*, 17, 217-236.
- Fairclough, S., Stratton, G. & Baldwin, G. (2002). The contribution of secondary school education to lifetime physical activity. *European Physical Education Review*, 8, 69-84.
- Ferreira, I., van der Horst, K., Wendel-Vos, W., Kremer, S., van Lenthe, F. J. & Brug, J. (2007). Environmental correlates of physical activity in youth - a review and update. *Obesity Research*, 8(2), 129-154.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-140.
- Field, A. (2005). *Discovering statistics using SPSS* (2nd Ed.). London: Sage Publications.
- Fit for Girls Programme Report (2008). sportscotland and Youth Sport Trust.
- Flintoff, A. & Scranton, S. (2001). Stepping into active leisure? Young women's perceptions of active lifestyles and their experiences of school physical education. *Sport, Education and Society*, 6, 5-21.
- Fox, K. R. (1990). *Physical Self-Perception Profile manual*: Dekalb, IL: Office for health promotion, Northern Illinois University.
- Fox, K. R. (1997). *The physical self: From motivation to well-being.*: Champaign, IL: Human Kinetics.

- Fox, K. R. (1998). Advances in the measurement of the physical self. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 295-310). Morgantown, WV: Human kinetics.
- Fox, K. R. (2000). Self-esteem, self-perception and exercise. *International Journal of Sport Psychology*, *31*, 228-240.
- Fox, K. R. & Corbin, C. B. (1989). The Physical Self-Perception Profile: Development and preliminary validation. *Journal of Sport and Exercise Psychology*, *11*, 408-430.
- Fuentes, R. M., Notkola, I. L., Shemeikka, S., Tuomilehto, J. & Nissinen, A. (2003). Tracking of body mass index during childhood: a 15-year prospective population-based family study in eastern Finland. *International Journal of Obesity Related Metabolic Disorders*, *27*(6), 716-721.
- Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory. Strategies for qualitative research*. Chicago: Aldine.
- Gibbs, G. R. (2007). *Analyzing qualitative data*. London: Sage publications.
- Gidlow, C., Cochrane, T., Davey, R. & Smith, H. (2007). *During and out-of-school physical activity levels in primary and secondary school children*. Paper presented at the Bases Annual Conference 2007, University of Bath.
- Giorgi, A. & Giorgi, B. (2003). Phenomenology. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods*. London: Sage publications.
- Goran, M. I., Gower, B. A., Nagy, T. R. & Johnson, R. K. (1998). Developmental changes in energy expenditure and physical activity in children: evidence for a decline in physical activity in girls before puberty. *Pediatrics*, *101*(5), 887-891.
- Gordon-Larsen, P., McMurray, R. G. & Popkin, B. M. (2000). Adolescent physical activity and inactivity vary by ethnicity: The National Longitudinal Study of Adolescent Health. *Journal of Pediatrics*, *135*(3), 301-306.
- Gordon-Larsen, P., Nelson, M. C. & Popkin, B. M. (2004). Longitudinal physical activity and sedentary behaviour trends: Adolescence to adulthood. *American Journal of Preventive Medicine*, *27*(4), 277-283.
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, *24*(2), 105-112.

- Gruber, J. J. (1986). Physical activity and self-esteem development in children: A meta-analysis. *American Academy of Physical Education Papers*, 19, 330-348.
- Grunbaum, J., Kann, L., Kinchen, S., Ross, J., Hawkins, J. & Lowry, R. (2004). Youth risk behaviour surveillance - United States 2003. *Morbidity and Mortality weekly*, 53(SS-2), 1-96.
- Gubrium, J. F. & Holstein, J. A. (1998). Narrative practice and the coherence of personal stories. *The Sociological Quarterly*, 39(1), 163-187.
- Guo, S. S., Chumlea, W. M. C., Roche, A. F. & Siervogal, R. M. (1998). Age and maturity related changes in body composition during adolescence into adulthood: The Fels longitudinal study. *Applied Radiation and Isotopes*, 49(5/6), 581-585.
- Hagger, M. S., Ashford, B. & Stambulova, N. (1998). Russian and British children's physical self-perceptions and physical activity participation. *Pediatric Exercise Science*, 10, 137-152.
- Hagger, M. S., Biddle, S., Chow, E. W., Stambulova, N. & Kavassanu, M. (2003). Physical self-perceptions in adolescence. Generalisability of a hierarchical multidimensional model across three cultures. *Journal of Cross-Cultural Psychology*, 34(6), 611-628.
- Hagger, M. S., Biddle, S. & Wang, C. K. (2005). Physical self-concept in adolescence: Generalisability of a multidimensional, hierarchical model across gender and grade. *Educational and Psychological Measurement*, 65(2), 297-322.
- Hagger, M. S., Lindwall, M. & Asci, H. (2004). A multidimensional and hierarchical model of physical self-perceptions: a cross-cultural study across three nations. *Journal of Applied Social Psychology*, 34, 1075-1107.
- Hammersley, M. (1996). The relationship between qualitative and quantitative research: paradigm loyalty versus methodological eclecticism. In J. T. E. Richardson (Ed.), *Handbook of qualitative research methods for psychology and the social sciences*. Leicester: The British Psychological Society Books.
- Hardman, K. & Marshall, J. (2000). The state and status of physical education in schools in international context. *European Physical Education Review*, 6, 203-229.
- Hardy, L., Jones, G. & Gould, D. (1996). *Understanding psychological preparation for sport: Theory and practice for elite performers*. Chichester.

- Hart, E. A., Leary, M. R. & Rejeski, W. J. (1989). The measurement of social physique anxiety. *Journal of Sport and Exercise Psychology*, *11*, 94-104.
- Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. *Human Development*, *21*, 34-64.
- Harter, S. (1982). The perceived competence scale for children. *Child Development*, *53*, 87-97.
- Harter, S. (1985). *Manual for the Self-Perception Profile for Children*. University of Denver, Denver.
- Harter, S. (1986). Processes underlying the construction, maintenance and enhancement of self-concept in children. In J. Suls & A. Greenwald (Eds.), *Psychological perspectives on the self* (Vol. 3, pp. 136-182). Hillsdale, NJ: Erlbaum.
- Harter, S. (1988). *Manual for the Self-Perception Profile for Adolescents*. University of Denver, Denver.
- Hausenblas, H. A., Brewer, B. W. & Van Raalte, J. L. (2004). Self-Presentation and Exercise. *Journal of Applied Sport Psychology*, *16*, 3-18.
- Havighurst, R. J. (1972). *Developmental tasks and education*. New York: McKay.
- Heitzler, C. D., Martin, S. L., Duke, J. & Huhman, M. (2006). Correlates of physical activity in a national sample of children aged 9-13 years. *Preventive Medicine*, *42*(4), 254-260.
- Hohepa, M., Scragg, R., Schofield, G., Kolt, G. S. & Schaff, D. (2007). Social support for youth physical activity: Importance of siblings, parents, friends and school support across a segmented school day. *The International Journal of Behavioural Nutrition and Physical Activity*, *4*(54), 1-9.
- Holm, K., Li, S., Spector, N., Hicks, F., Carlson, E. & Lanuza, D. (2001). Obesity in adults and children: a call for action. *Journal of Advanced Nursing*, *36*(2), 266-269.
- Holstein, J. A. & Gubrium, J. F. (1995). *The active interview*. Thousand Oaks, CA: Sage.
- Holstein, J. A. & Gubrium, J. F. (2000). *The self we live by: Narrative identity in a postmodern world*. The self we live by: Narrative identity in a postmodern world xi, 268 pp New York, NY, US: Oxford University Press.

- Humpel, N., Owen, N. & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: a review. *American Journal of Preventive Medicine*, 22(3), 188-199.
- Inchley, J. C., Currie, D. B., Todd, J. M., Akhtar, P. C. & Currie, C. E. (2004). Persistent socio-demographic differences in physical activity among Scottish schoolchildren 1990–2002. *European Journal of Public Health*, 15(4), 386-388.
- Inchley, J. C., Kirby, J. & Currie, C. E. (2008). *Physical Activity in Scottish School children: Final Report of the PASS study*. Child and Adolescent Health Research Unit, Edinburgh University.
- Ivy, J. L., Zderic, T. W. & Fogt, D. L. (1999). Prevention and treatment of non-insulin-dependent diabetes mellitus. *Exercise and Sport Sciences Reviews*, 27, 1-35.
- Jago, R., Brockman, R., Fox, K. R., Cartwright, K., Page, A. S. & Thompson, J. L. (2009). Friendship groups and physical activity: qualitative findings on how physical activity is initiated and maintained among 10-11 year old children. *International Journal of Behavioural Nutrition and Physical Activity*, 6(4).
- James, K. (2000). "You can feel them looking at you": The experiences of adolescent girls at swimming pools. *Journal of Leisure Research*, 32, 262-280.
- Janssen, I. (2007). Advancing physical activity measurement and guidelines in Canada: A scientific review and evidence-based foundation for the future of Canadian physical activity guidelines. *Canadian Journal of Public Health*, 98(Suppl. 2).
- Janz, K. F., Witt, J. & Mahoney, L. T. (1995). The stability of children's physical activity as measured by accelerometry and self-report. *Medicine and Science in Sports and Exercise*, 27(9), 1326-1332.
- Kimm, S. Y., Glynn, N. W., Kriska, A. M., Barton, B. A., Kronsberg, S. S., Daniels, S. R., et al. (2002). Decline in physical activity in black girls and white girls during adolescence. *New England Journal of Medicine*, 347(10), 709-715.
- King, A. J., & Coles, B. (1992). *The health of Canada's youth*. Ottawa: Ministry of Health and Welfare.
- Klein-Platat, C., Oujaa, M., Wagner, A., Haan, M. C., Arveiler, D., Schlienger, J. L., et al. (2005). Physical activity is inversely related to waist circumference in 12-year-old French adolescents. *International Journal of Obesity*, 29, 9-14.

- Kowalski, K., Crocker, P. & Kowalski, N. (1997). Convergent validity of the Physical Activity Questionnaire for Adolescents. *Pediatric Exercise Science*, 9, 342-352.
- LaPorte, R. E., Montoye, H. J. & C. J. Caspersen (1985). Assessment of physical activity in epidemiologic research: problems and prospects. *Public Health Report*, 100(2), 131-146.
- Leary, M. R. (1992). Self-presentational processes in exercise and sport. *Journal of Sport and Exercise Psychology*, 14, 339-351.
- Lieblich, A., Tuval-Mashiach, R. & Zilbar, T. (1998). *Narrative research*. London: Sage publications.
- Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lintunen, T., Leskinen, E., Oinonen, M., Salinto, M. & Rahkila, P. (1995). Change, reliability and stability in self-perceptions in early adolescence: A four-year follow-up study. *International Journal of Behavioural Development*, 18(2), 351-364.
- Lohman, T. G., Ring, K., Schmitz, K. H., Treuth, M. S., Loftin, M., Yang, S., et al. (2006). Associations of body size and composition with physical activity in adolescent girls. *Medicine and Science in Sports and Exercise*, 38(6), 1175-1181.
- Lotan, M., Merrick, J. & Carmelli, E. (2004). Physical activity in adolescence. A review with clinical suggestions. *International Journal of Adolescent Medicine and Health*, 17(1), 13-21.
- Loucaides, C. A., Chedzoy, S. M. & Bennett, N. (2004). Differences in physical activity levels between urban and rural school children in Cyprus. *Health Education Research*, 19, 138-47.
- Loucaides, C. A., Plotnikoff, R. C. & Bercovitz, K. (2007). Differences in the correlates of physical activity between urban and rural Canadian youth. *Journal of School Health*, 77(4), 164-170.
- Lowther, M. & Reid, M. (2008). *National Physical Activity Implementation Framework 2008-2011*. Presented at Physical Activity and Health Alliance Conference, 27th February 2008, Murrayfield Stadium, Edinburgh.
- Lox C. L., Martin Ginis K. A. & Petruzzello S. J. (2006). *The psychology of exercise, integrating theory and practice, second edition*. Scottsdale, Arizona: Holcomb Hathaway Publishers.

- Lu, P. W., Brody, J. N., Ogle, G. D., Morley, K., Humphries, I. R., Allen, J., et al. (1994). Bone mineral density of total body, spine, and femoral neck in children and young adults: a cross-sectional and longitudinal study. *Journal of Bone Mineral Research*, 9(9), 1451-8.
- Mackelvie, K., McKay, H., Khan, K. & Crocker, P. (2001). A school-based exercise intervention augments bone mineral accrual in early pubertal girls. *The Journal of Pediatrics*, 139(4), 501-508.
- Maddux, J. (1995). Looking for common ground: A comment on Bandura and Kirsch. In J. Maddux (Ed.), *Self-efficacy, adaptation and adjustment: Theory, research and application*. New York: Plenum Press.
- Malina, R. M., Bouchard, C. & Bar-Or, O. (2004). *Growth, maturation and physical activity* (2nd Ed.). Human Kinetics.
- Mattocks, C., Deere, K., Leary, S., Ness, A., Tilling, K., Blair, S. N., et al. (2008). Early life determinants of physical activity in 11 to 12 year olds: cohort study. *British Journal of Sports Medicine*, 42(9), 721-4.
- Marsh, H. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of Educational Psychology*, 79, 280-295.
- Marsh, H. (1988). *Self-Description Questionnaire I*. San Antonio, TX: Psychological Corporation.
- Marsh, H. (1990). The structure of the academic construct: The Marsh/Shavelson model. *Journal of Educational Psychology*, 82, 623-636.
- Marsh, H. (1993). Academic self-concept: Theory, measurement and research. In J. Suls (Ed.), *Psychological perspectives on the self* (Vol. 4, pp. 59-98). Hillsdale, NJ: Erlbaum.
- Marsh, H. (1997). The measurement of physical self-concept: A construct validation approach. In K. R. Fox (Ed.), *The physical self: From motivation to well-being*. (pp. 27-58.). Champaign, IL: Human Kinetics.
- Marsh, H., Byrne, B. M. & Shavelson, R. J. (1992). A multidimensional hierarchical self-concept. In T. M. L. Brinthaupt, R. P. (Ed.), *The self: Definitional and methodological issues* (pp. 44-95.). Albany: State University of New York Press.

- Marsh, H. & Gouvenet, P. (1989). Multidimensional self-concepts and perceptions of control. Construct validation of responses by children. *Journal of Educational Psychology, 81*, 57-69.
- Marsh, H. W., Richards, G. E., Johnson, S., Roche, L. & Tremayne, P. (1994). Physical Self-Description Questionnaire: Psychometric properties and a multitrait-multimethod analysis of relations to existing instruments. *Journal of Sport and Exercise Psychology, 16*, 270-305.
- Marshall, S. J., Biddle, S. J., Gorely, T., Cameron, N. & Murdey, I. (2004). Relationships between media use, body fatness and physical activity in children and youth: a meta-analysis. *International Journal of Obesity Related Metabolic Disorders, 28*(10), 1238-1246.
- McCarthy, H. D., Jarrett, K. V. & Crawley, H. F. (2001). Original communication: The development of waist circumference percentiles in British children aged 5.0-16.9y. *European Journal of Clinical Nutrition, 55*, 902-907.
- McKenzie, T. L., Sallis, J. F., Elder, J. P., Berry, C. C., Hoy, P. L., Nader, P. R., et al. (1997). Physical activity levels and prompts in young children at recess: a two-year study of a bi-ethnic sample. *Research Quarterly for Exercise and Sport, 68*(3), 195-202.
- Merrill, R., Shields, E., White, L. & Druce, D. (2005). Climate conditions and physical activity in the United States. *American Journal of Health Behavior, 29*(4), 371-381.
- Michaud, P. A., Suris, J. C. & Deppen, A. (2006). Gender-related psychological and behavioural correlates of pubertal timing in a national sample of Swiss adolescents. *Molecular and Cellular Endocrinology, 254-255*, 172-178.
- Mirwald, R. L., Baxter-Jones, A. D., Bailey, D. A. & Beunen, G. P. (2002). An assessment of maturity from anthropometric measurements. *Medicine and Science in Sports and Exercise, 34*(4), 689-694.
- Mishler, E. G. (1986). *Research Interviewing: Context and Narrative*. Cambridge, MA: University Press.
- Monsma, E. V., Malina, R. M. & Feltz, D. L. (2006). Puberty and physical self-perceptions of competitive female figure skaters: an interdisciplinary approach. *Research Quarterly for Exercise and Sport, 77*(2), 158-166.

- Mosley, J. R. & Lanyon, L. E. (2002). Growth rate rather than gender determines the size of the adaptive response of the growing skeleton to mechanical strain. *Bone*, 30(1), 314-9.
- Motl, R. W., Dishman, R. K., Saunders, R., Dowda, M., Felton, G. & Pate, R. R. (2001). Measuring enjoyment of physical activity in adolescent girls. *American Journal of Preventive Medicine*, 21(2), 110-117.
- Morris, N. M. & Udry, J. R. (1980). Validation of a self-administered instrument to assess stage of adolescent development. *Journal of Youth and Adolescence*, 9, 271-280.
- Mulvihill, C., Rivers, K. & Aggleton, P. (2000). Views of young people towards physical activity: determinants and barriers. *Health Education*, 100(5), 190-199.
- Murray, M. (1997). A narrative approach to health psychology: background and potential. *Journal of Health Psychology*, 2, 9-20.
- Murray, M. (1999). The storied nature of health and illness. In M. Murray & K. Chamberlain (Eds.), *Qualitative health psychology: Theories and Methods* (pp. 47-63). London: Sage.
- Murray, M. (2003). Narrative psychology. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods*. Thousand Oaks, CA: Sage Publications.
- Murray, M. (2008). Narrative psychology. In J. A. Smith (Ed.), *Qualitative psychology: a practical guide to research methods*. (2nd ed.). London: Sage publications.
- Mutrie, N. & Parfitt, G. (1998). Physical activity and its links with mental, social and moral health in young people. In Biddle, S., Sallis, J. & Cavill N.(Eds). *Young and active? Young people and health-enhancing physical activity: evidence and implications*. London: Health Education Authority.
- Mutz, D., Roberts, D. & van Vuuren, D. (1993). Reconsidering the displacement hypothesis. *Communication Research*, 20(1), 51-75.
- Nelson, M.C., Neumark-Stzainer, D., Hannan, P.J., Sirard, J. R. & Story, M. (2006). Longitudinal and Secular Trends in Physical Activity and Sedentary Behaviour During Adolescence. *Pediatrics*, 118(6), 1627-1634.
- Neumark-Sztainer, D., Story, M., Hannan, P. J., Tharp, T. & Rex, J. (2003). Factors associated with changes in physical activity: a cohort study of inactive adolescent girls. *Archives of Pediatric Adolescent Medicine*, 157(8), 803-810.

- Nicholls, J. G. (1984). Conceptions of ability and achievement motivation. In R. E. Ames and C. E. Ames (Eds.), *Research on motivation in education: Vol 1. Student motivation*. New York: Academic Press.
- O'Dea, J. A. (2006). Self-concept, self-esteem and body weight in adolescent females: a three-year longitudinal study. *Journal of Health Psychology, 11*(4), 599-611.
- O'Dea, J. A., & Abraham, S. (1999). Association between self-concept and body weight, gender, and pubertal development among male and female adolescents. *Adolescence, 34*(133), 69-79.
- Oliver, K. L. (1998). A journey into narrative analysis: A methodology for discovering meanings. *Journal of Teaching in Physical Education, 17*(2), 244-259.
- O'Loughlin, J., Paradis, G., Kishchuk, N., Barnett, T. & Renaud, L. (1999). Prevalence and correlates of physical activity behaviours among elementary schoolchildren in multiethnic, low income, inner-city neighbourhoods in Montreal, Canada. *Annals of Epidemiology, 9*(7), 397-407.
- Ornelas, I. J., Perreira, K. M. & Ayala, G. X. (2007). Parental influences on adolescent physical activity: a longitudinal study. *International Journal of Behaviour, Nutrition and Physical Activity, 5*(12), 5-12.
- Ostrow, A. C. (1990). *Directory of psychological tests in the sport and exercise sciences*. Morgantown, WV: Fitness Information Technology.
- Overcash, J. A. (2003). Narrative research: a review of methodology and relevance to clinical practice. *Critical reviews in Oncology/Haematology, 48*, 179-184.
- Parker, I. (1997). Discursive psychology. In D. Fox & I. Prilleltensky (Eds.), *Critical psychology. An introduction*. London: Routledge.
- Partington, E., Partington, S., Fishwick, L. & Allin, L. (2005). Mid-life nuances and negotiations: Narrative maps and the social construction of mid-life in sport and physical activity. *Sport, Education and Society, 10*(1), 85-99.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.
- Penedo, F. J. & Dahn, J. R. (2005). Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Behavioural Medicine, 18*(2), 189-193.

- Petersen, A. C., Crockett, L., Richards, M. & Boxer, A. (1988). A self-report measure of pubertal status: reliability, validity and initial norms. *Journal of Youth and Adolescence*, 17(2), 117-133.
- Phoenix, C., Smith, B. & Sparkes, A. C. (2007). Experiences and expectations of biographical time among young athletes: A life course perspective. *Time and Society*, 16(2-3), 231-252.
- Polkinghorne, D. E. (1988). *Narrative knowing and the human sciences. SUNY series in philosophy of the social sciences*. Narrative knowing and the human sciences. xi, 232 pp. Albany, NY: State University of New York Press.
- Polkinghorne, D. E. (1995). Narrative configuration in qualitative analysis. In A. Hatch & R. Wisniewski (Eds.), *Life history and narrative* (pp. 5-25). London: Falmer Press.
- Prince, S. A., Adamo, K. B., Hamel, M. E., Hardt, J., Gorber, S. C. & Tremblay, M. (2008). A comparison of direct versus self-report measures for assessing physical activity in adults: a systematic review. *The International Journal of Behavioural Nutrition and Physical Activity*, 5, 56.
- Prochaska, J. J., Sallis, J. F. & Long, B. (2001). A physical activity screening measure for use with adolescents in primary care. *Archives of Pediatric Adolescent Medicine*, 155(5), 554-559.
- Qualifications and Curriculum Authority (QCA). *Physical Education: A Scheme of Work for Key Stages 1 and 2*. London: QCA, 2000.
- Raudsepp, L. (2006). The relationship between socio-economic status, parental support and adolescent physical activity. *Acta Paediatrica*, 95(1), 93-98.
- Raudsepp, L., Liblik, R. & Hannus, A. (2002). A children's and adolescents' physical self-perceptions as related to vigorous physical activity and physical fitness. *Pediatric Exercise Science*, 14, 97-106.
- Raustorp, A., Stahle, A., Gudasic, H., Kinnunen, A. & Mattsson, E. (2005). Physical activity and self-perception in school children assessed with the Children and Youth--Physical Self-Perception Profile. *Scandinavian Journal of Medicine and Science in Sports*, 15(2), 126-134.
- Raymond, C. (1998). *Coordinating Physical education Across the Primary School*. London: Falmer.

- Reynolds, E. L. & Wines, J. V. (1951). Physical changes associated with adolescence in boys. *American Medical Association*, 82(5), 529-547.
- Richards, G. E. (1987, January). *Outdoor education in Australia in relation to the Norman conquest, a Greek olive grove and the external perspective of the horse's mouth*. Paper presented at the 5th National Outdoor Education Conference, Outward bound school: Tharwa, ACT Australia.
- Riddoch, C., Anderson, B. & Wedderkopp, L. (2004). Physical Activity Levels and Patterns of 9- and 15-yr-Old European Children. *Medicine & Science in Sports & Exercise*. 36(1):86-92.
- Riddoch, C., Mattocks, C., Deere, K., Saunders, J., Kirkby, J., Tilling, K., et al. (2007). Objective measurement of levels and patterns of physical activity. *Archives of Disease in Childhood*, 92(11), 963-969.
- Ridgers, N. D., Stratton, G. & Fairclough, S. J. (2006). Physical activity levels of children during school playtime. *Sports Medicine*, 36, 359-371.
- Ridgers, N. D., Stratton, G., Fairclough, S. J. & Twisk, J. (2007). Children's physical activity levels during school recess: a quasi-experimental intervention study. *The International Journal of Behavioural Nutrition and Physical Activity*, 4:19.
- Roberts, G. C., Kleiber, D. & Duda, J. L. (1981). An analysis of motivation in children's sport: The role of perceived competence in participation. *Journal of Sport Psychology*, 3, 206-216.
- Roberts, C., Tynjala, J. & Komkov, A. (2003). *Young people's health in context: Physical Activity*. Health Behaviour in School-aged Children study: international report from the 2001/2002 survey.
- Rodin, J., Silberstein, L. R. & Striegel-Moore, R. H. (1985). *Women and weight: a normative discontent*. Lincoln, NE: University of Nebraska.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton: Princeton University Press.
- Rowlands, A. V., Eston, R. G. & Ingledew, D. K. (1997). Measurement of physical activity in children with particular reference to the use of heart rate and pedometry. *Sports Medicine*, 24(4), 258-272.
- Sallis, J. F. (2000). Age-related decline in physical activity: a synthesis of human and animal studies. *Medicine and Science in Sports and Exercise*, 32(9), 1598-1600.

- Sallis, J., Buaman, A. & Pratt, M. (1999). Environmental and policy interventions to promote physical activity. *American Journal of Preventive Medicine*, 15(4), 379-397.
- Sallis, J., Buono, M., Roby, J., Micale, F. & Nelson, J. (1993). Seven-day recall and other physical activity self-reports in children and adolescents. *Medicine and Science in Sports and Exercise*. 25(1):99-108.
- Sallis, J. F. & Owen, N. (1999). *Physical activity and behavioural medicine*. Thousand Oaks, CA: Sage.
- Sallis, J. F. & Owen, N. (2002). Ecological models of health behaviour. In K. Glanz, B. Rimer & F. Lewis (Eds.), *Health Behaviour and Health Education: Theory, research and Practice* (3rd ed., pp. 403-424). San Francisco: Jossey-Bass.
- Sallis, J. F., Prochaska, J. J. & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, 32(5), 963-975.
- Sallis, J. F., Prochaska, J. J., Taylor, W. C., Hill, J. O., & Geraci, J. C. (1999). Correlates of physical activity in a national sample of girls and boys in grades 4 through 12. *Health Psychology*, 18(4), 410-415.
- Sallis, J. F., Simons-Morton, B. G., Stone, E. J., Corbin, C. B., Epstein, L. H., Faucette, N., et al. (1992). Determinants of physical activity and interventions in youth. *Medicine and Science in Sports and Exercise*, 24(6 Suppl), S248-257.
- Sallis, J. F., Strikmiller, P. K., Harsha, D. W., Feldman, H. A., Ehlinger, S., Stone, E. J., et al. (1996). Validation of interviewer- and self-administered physical activity checklists for fifth grade students. *Medicine and Science in Sports and Exercise*, 28(7), 840-851.
- Santos, M. P., Matos, M. & Mota, J. (2004). Seasonal variations in Portuguese adolescents' organized and non-organized physical activities. *Pediatric Exercise Science*, 17, 390-8.
- Sarbin, T. (1986). *Narrative psychology: The storied nature of human conduct*. New York: Praeger.
- Shavelson, R., Hubner, J. J. & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research*, 46(3), 407-441.

- Sinton, M., Davison, K. & Birch, L. (2005). Evaluating the association between girls' reactions to pubertal development and girls' risk for body dissatisfaction and disordered eating. In *Proceedings of the international conference on eating disorders*. Montreal, Canada. Smucker, M. R., Craighead, W. E., Craighead, L. W., & Green.
- Smith, J. A. (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health, 11*, 261-271.
- Smith, J. A. (2003). *Qualitative psychology: a practical guide to research methods*. London: Sage publications.
- Smith, J. A. (2008). *Qualitative psychology: a practical guide to research methods*. (2nd ed.). London: Sage publications.
- Smith, J. A. & Osborn, M. (2000). Doing interpretative phenomenological analysis. In M. Murray & K. Chamberlain (Eds.), *Qualitative health psychology*. London: Sage publications.
- Smith, B. & Sparkes, A. C. (2008). Changing bodies, changing narratives and the consequences of tellability: a case study of becoming disabled through sport. *Sociology of Health and Illness, 30*(2).
- Smith, B. & Sparkes, A. C. (2009a). Narrative inquiry in sport, exercise and health psychology: What can it mean, and why might we do it? *Psychology of Sport and Exercise, 10*(10), 1-11.
- Smith, B. & Sparkes, A. C. (2009b). Narrative analysis and sport and exercise psychology: Understanding lives in diverse ways. *Psychology of Sport and Exercise, 10*(2), 279-288.
- Soanes, C. & Stevenson, A. (2005). *Oxford Dictionary of English*. Oxford University Press.
- Sollerhed, A. C., Apitzsch, E., Rastam, L. & Ejlertsson, G. (2008). Factors associated with young children's self-perceived physical competence and self-reported physical activity. *Health Education Research, 23*, 125-136
- Sonstroem, R. J. (1997). The psychological benefits of exercise. *Medicine and Health Rhode Island, 80*(9), 295-296.

- Sonstroem, R. J., Speliotis, E. D. & Fava, J. L. (1992). Perceived physical competence in adults; an examination of the Physical Self-Perception Profile. *Journal of Sport and Exercise Psychology*, 14, 207-221.
- Sparkes, A. C. (1999). Exploring body narratives. *Sport, Education and Society*, 4(1), 17-30.
- Sparkes, A. C. & Partington, S. (2003). Narrative practice and its potential contribution to sport psychology: The example of flow. *The Sport Psychologist*, 17, 292-317.
- Sparkes, A. C. & Smith, B. (2003). Men, sport, spinal cord injury and narrative time. *Qualitative Research*, 3(3), 295-320.
- Springer, A. E., Kelder, S. H. & Hoelscher, D. M. (2006). Social support, physical activity and sedentary behaviour among 6th-grade girls: a cross-sectional study. *International Journal Behavioural Nutrition and Physical Activity*, 3, 8.
- Stein, C., Fisher, L., Berkey, C. & Colditz, G. (2007). Adolescent physical activity and perceived competence: does change in activity level impact self-perception? *Journal of Adolescent Health*, 40(5), 462 e461-468.
- Strauss, R. S., Rodzilsky, D., Burack, G. & Colin, M. (2001). Psychosocial correlates of physical activity in healthy children. *Archives of Pediatrics and Adolescent Medicine*, 155(8), 897-902.
- Tabachnick, B. G. & Fidell, L. S. (2001). *Using multivariate statistics*. Needham Heights, MA: Pearson Education Company.
- Tanner, J. M. (1962). *Growth at adolescence* (2nd Ed.). Oxford, England: Blackwell.
- Taylor, W. C., Baranowski, T. & Sallis, J. F. (1994). Family determinants of childhood physical activity; a social-cognitive model. In R. K. Dishman (Ed.), *Advances in Exercise Adherence* (pp. 319-342). Champaign, IL: Human Kinetics.
- Taylor, W. C. & Sallis, J. F. (1997). Determinants of physical activity in children. *World Review of Nutrition and Dietetics*, 82, 159-167.
- Taylor, S. J., Whincup, P. H., Hindmarsh, P. C., Lampe, F., Odoki, K. & Cook, D. G. (2001). Performance of a new pubertal self-assessment questionnaire: a preliminary study. *Paediatr Perinat Epidemiol*, 15(1), 88-94.
- Telema, R. & Yang, X. (2000). Decline from physical activity from youth to young adulthood in Finland. *Medicine and Science in Sports and Exercise*, 32, 1617-1622.

- Telema, R., Yang, X., Viikari, J., Valimaki, I., Wanne, O. & Raitakari, O. (2005). Physical activity from childhood to adulthood: A 21 year tracking study. *American Journal of Preventive Medicine*, 28(3), 267-273
- Thomas, J. R. & Nelson, J. K. (1996). *Research methods in physical activity* (3rd Ed.). Champaign, IL: Human Kinetics.
- Thomas, J. R., Nelson, J. K. & Silverman, S. J. (2005). *Research methods in physical activity* (5th Ed.). Champaign, IL: Human Kinetics.
- Thompson, A. M., Baxter-Jones, A. D., Mirwald, R. L. & Bailey, D. A. (2003). Comparison of physical activity in male and female children: does maturation matter? *Medicine and Science in Sports and Exercise*, 35(10), 1684-1690.
- Thompson, A. M. & Chad, K. E. (2000). The relationship of pubertal status to body image, social physique anxiety, preoccupation with weight and nutritional status in young females. *Canadian Journal of Public Health*, 91(3), 207-211.
- Tibault, J. W. & Kelley, H. H. (1959). *The social psychology of groups*. New York: Wiley.
- Treuth, M., Hou, N., Young, D. & Maynard, L. (2005). Validity and Reliability of the Fels Physical Activity Questionnaire for Children. *Medicine and Science in Sports and Exercise*, 37(3):488-495.
- Trost, S. G., Pate, R. R., Sallis, J., Freedson, P., Taylor, W., Dowda, M., et al. (2002). Age and gender differences in objectively measured physical activity in youth. *Medicine and Science in Sports and Exercise*, 34(2):350-355.
- Trost, S. G., Pate, R. R., Saunders, R., Ward, D. S., Dowda, M. & Felton, G. (1997). A prospective study of the determinants of physical activity in rural fifth-grade children. *Preventive Medicine*, 26(2), 257-263.
- Trost, S. G., Pate, R. R., Ward, D. S., Saunders, R. & Riner, W. (1999). Correlates of objectively measured physical activity in preadolescent youth. *American Journal of Preventive Medicine*, 17(2), 120-126.
- Trudeau, F. & Shepherd, R. J. (2005). Contribution of school programmes to physical activity levels and attitudes in children and adults. *Sports Medicine*, 35(2), 89-105.
- Tucker, P. & Gilliland, J. (2007). Effects of season and weather on physical activity: A systematic review. *Public Health*, 121(12), 909-922.

- Twisk, J. W. (2001). Physical activity guidelines for children and adolescents: a critical review. *Sports Medicine*, 31(8), 617-627.
- Valentine, G. (2000). Exploring children and young people's narratives of identity. *Geoforum*, 31, 257-267.
- Van der Horst, K., Paw, M., Twisk, J. & Van Mechelen, W. (2007). A Brief Review on Correlates of Physical Activity and Sedentariness in Youth. *Medicine and Science in Sports and Exercise*, 39(8), 1241-1250.
- van Sluijs, E. M. F., McMinn, A. M. & Griffin, S. J. (2007). Effectiveness of interventions to promote physical activity in children and adolescents: A systematic review of controlled trials. *British Medical Journal*, 335, 703-716.
- Veronesi, F. M. & Guerresi, P. (1994). Trend in menarcheal age and socioeconomic influence in Bologna (northern Italy). *Annals of Human Biology*, 21(2), 187-196.
- Voorhees, C. C., Murray, D., Welk, G., Birnbaum, A., Ribisl, K. M., Johnson, C. C., et al. (2005). The role of peer social network factors and physical activity in adolescent girls. *American Journal of Health Behaviour*, 29(2), 183-190.
- Waldron, J. J. (2007). Influence of involvement in the girls on track program on early adolescent girls' self-perceptions. *Research Quarterly for Exercise and Sport*, 78(5), 520-530.
- Weiss, M. (1987). Self-esteem and achievement in children's sport and physical activity. In D. Gould & M. Weiss (Eds.), *Advances in pediatric sport sciences* (pp. 87-119). Champaign, IL: Human Kinetics.
- Weiss, M., Bredemeier, B. J. & Shewchuck, R. M. (1986). The dynamics of perceived competence, perceived control and motivational orientation in youth sport. In M. Weiss & D. Gould (Eds.), *Sport for children and youths* (pp. 89-101). Champaign, IL: Human Kinetics.
- Welk, G. J., Corbin, C. B., Dowell, M. N. & Harri, H. (1997). The validity and reliability of two different versions of the children and youth physical self-perception profile. *Measurement in Physical Education and Exercise Science*, 1, 163-177.
- Welk, G. J., Corbin, C. B. & Lewis, L. A. (1995). Physical self-perceptions of high school athletes. *Pediatric Exercise Science*, 7, 152-161.

- Welk, G. J. & Eklund, B. (2005). Validation of the children and youth physical self-perception profile for young children. *Psychology of Sport and Exercise*, 6, 51-65.
- West, P. & Sweeting, H. (1997). "Lost souls" and "rebels": a challenge to the assumption that low self-esteem and unhealthy lifestyles are related. *Health Education*, 97(5), 161-167.
- Weston, R., Petosa, R. & Pate, R. (1997). Validation of an instrument for measurement of physical activity in youth. *Medicine and Science in Sports and Exercise*. 29(1):138-143.
- White, R. (1959). Motivation reconsidered. The concept of competence. *Psychological Review*, 66, 297-323.
- Whitehead, J. R. (1995). A Study of Children's Physical Self-Perceptions Using an Adapted Physical Self-Perception Profile Questionnaire. *Pediatric Exercise Science*, 7, 132-151.
- Whitehead, S. H. & Biddle, S. (2008). Adolescent girls' perceptions of physical activity: A focus group study. *European Physical Education Review*, 14(2), 243-262.
- Whitehead, S. H., Biddle, S., O'Donovan, T. M. & Nevill, M. E. (2006). Social-psychological and physical environmental factors in groups differing by levels of physical activity: A study of Scottish adolescent girls. *Pediatric Exercise Science*, 18, 226-239.
- Whitehead, J. R. & Corbin, C. B. (1991). Effects of fitness test type, teacher, and gender on exercise intrinsic motivation and physical self-worth. *Journal of School Health*, 61(1), 11-16.
- Wickel, E. E. & Eisenmann, J. C. (2007). Maturity-related differences in physical activity among 13- to 14-year-old adolescents. *Pediatric Exercise Science*, 19, 384-392.
- Wilkinson, S. (2003). Focus groups. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods*. London: Sage publications.
- Williams, C. L., Carter, B. J. & Eng, A. (1980). The "Know Your Body" program: a developmental approach to health education and disease prevention. *Preventive Medicine*, 9(3), 371-383.

- Williams, J. M. & Currie, C. (2000). Self-esteem and physical development in early adolescence. *Journal of Early Adolescence*, 20(2), 129-149.
- Wold, B. & Anderssen, N. (1992). Health promotion aspects of family and peer influences on sport participation. *International Journal of Sport Psychology*, 23, 343-359.
- Wylie, R. C. (1989). *Measures of self-concept*. University of Nebraska: Press Lincoln and London.
- Yardley, L. (2000). Dilemmas in qualitative health research. *Psychology and Health*, 15, 215-228.

APPENDIX A – Girls’ Health Questionnaire Booklet



sportscotland

GIRLS' HEALTH QUESTIONNAIRE BOOKLET

PHASE 3 DATA COLLECTION



INSTRUCTIONS

- Please fill in all the questions on your own quietly by COLOURING IN the circles very neatly with the pencil provided.



- The questions are about you and it would be a huge help if you could answer all the questions honestly and as best you can.
 - There are no right or wrong answers and no one will know your answers to any of the questions
 - If you are stuck or confused at any time put your hand up and we will try to help you
- Once again a **MASSIVE** thank you for filling this in!



GENERAL INFORMATION

1. FIRST NAME _____
2. SURNAME _____
3. DATE OF BIRTH (day/month/year) _____
4. WHAT SCHOOL ARE YOU FROM _____

SECTION 1



➤ The following questions are about your height and weight and about your family.

➤ Please answer all questions as best you can and remember there are no right or wrong answers and no one will know what your answers are.

1. **HOW MUCH DO YOU WEIGH?** (Please enter in EITHER kilograms OR stones and pounds, but not both!)

I weigh _____ kilograms

OR

I weigh _____ stones _____ pounds

OR

I don't know what I weigh

2. **HOW TALL ARE YOU?** Please enter in EITHER metres and centimetres OR feet and inches, but not both!)

I am _____ metre _____ centimetres tall

OR

I am _____ feet _____ inches tall

OR

I don't know what height I am

SECTION 2

- ❖ We are trying to find out about the amount of physical activity that you have done in the **LAST 7 DAYS** (in the last week)
- ❖ This includes any activity that makes your heart beat faster, you get warmer and makes you get out of breath some of the time.
- ❖ Physical activity can be done in sports, school activities, playing with friends and walking to school
- ❖ Remember that there are no right or wrong answers and no one will know what your answers are.



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

0	1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Over a typical week, on how many days are you physically active for a total of at least 60 minutes per day?

0	1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only ONE box per row).

ACTIVITY	No	1-2	3-4	5-6	7 or more times
Cycling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Football	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rollerblading or skateboarding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking for exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jogging or running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming lengths or widths	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gymnastics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aerobics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Active Games (e.g. chase, tig, skipping, rounders)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dance (e.g. disco, ballet, tap)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rugby	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basketball, netball, or volleyball	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tennis, badminton or squash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hockey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Golf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Karate, judo or tae kwon do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. In the last 7 days, during your Physical Education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Mark ONE box only).

I don't do PE	Hardly Ever	Sometimes	Quite Often	Always
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. In the last 7 days, what did you do most of the time at BREAK-TIME? (Mark ONE box only).

Sat down (talking, reading, doing schoolwork)	Stood around or walked a bit	Ran or played a bit	Ran or Played <u>quite</u> a bit	Ran and played hard most of the time
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. In the last 7 days, what did you normally do at LUNCH (besides eating lunch)? (Mark ONE box only).

Sat down (talking, reading, doing schoolwork)	Stood around or walked a bit	Ran or played a bit	Ran or Played <u>quite</u> a bit	Ran and played hard most of the time
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. In the last 7 days, on how many days RIGHT AFTER SCHOOL, did you do sports, dance or play games in which you were very active? (Mark ONE box only).

None	1 time last week	2 or 3 times last week	4 times last week	5 times last week
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. In the last 7 days, on how many EVENINGS did you do sports, dance or play games in which you were very active? (Mark ONE box only).

- | | | | | |
|-----------------------|-----------------------|------------------------|------------------------|------------------------|
| None | 1 time last week | 2 or 3 times last week | 4 or 5 times last week | 6 or 7 times last week |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9. ON THE LAST WEEKEND, how many times did you do sports, dance or play games in which you were very active? (Mark ONE box only).

- | | | | | |
|-----------------------|-----------------------|------------------------|------------------------|---------------------------|
| None | 1 time last week | 2 or 3 times last week | 4 or 5 times last week | 6 or more times last week |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10. Which ONE of the following describes you best for the last 7 days? Read ALL FIVE statements before deciding on ONE answer that describes YOU?

- a) All or most of my free time was spent doing things that involve little physical effort.
- b) I sometimes (1-2 times last week) did physical things in my free time (e.g. played sports, went running, bike riding, did aerobics).
- c) I quite often (3-4 times last week) did physical things in my free time.
- d) I often (5-6 times last week) did physical things in my free time.
- e) I very often (7 or more times last week) did physical things in my free time.

11. Mark how often you did physical activity (like playing sports, games, doing dance or any other physical activity) for **EACH DAY** (one circle per day) last week.

	None	Little bit	Medium	Often	Very often
Monday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wednesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thursday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saturday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sunday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. How many days last week did you walk or cycle to school?

None	<input type="radio"/>
1 time last week	<input type="radio"/>
2 or 3 times last week	<input type="radio"/>
4 or 5 times last week	<input type="radio"/>
6 or more times last week	<input type="radio"/>

13. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Mark ONE box only).

YES	NO
<input type="radio"/>	<input type="radio"/>

If yes, what prevented you?

--

SECTION 3



- ❖ The following questions deal with **YOUR** physical development
- ❖ Please answer all questions as best you can and remember all your answers are totally private.

1. Would you say that your growth spurt in height ("Growth Spurt" means more growth at once than usual):

Has not yet started to develop	Has barely started to develop	Development definitely underway	Development seems complete
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. And how about the growth of your body hair (meaning underarm and pubic hair)? Would you say that your body hair growth:

Has not yet started to develop	Has barely started to develop	Development definitely underway	Development seems complete
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Have you noticed any skin changes, especially spots?

Has not yet started to develop	Has barely started to develop	Development definitely underway	Development seems complete
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Have you noticed that your breasts have begun to grow?

Has not yet started to develop	Has barely started to develop	Development definitely underway	Development seems complete
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Have you begun to menstruate (have periods)?

No, I have not yet begun to menstruate	Yes, I have
<input type="radio"/>	<input type="radio"/>

If you answered yes, what age did you first get your period?

6. Do you think your physical development is/was any earlier or later than most other girls your age?

Much earlier	Somewhat earlier	About the same	Somewhat later	Much later
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



SECTION 4



- ❖ Some of these questions are about your body (physique or figure).
- ❖ Other questions relate to your attitude and desire to exercise.
- ❖ Try and answer all questions as best you can and no-one will know any of your answers to all of the questions.

Read each item carefully and decide how much it is like you according to the following scale:

1=	Not at all like me
2=	Slightly like me
3=	Moderately like me
4=	Very like me
5=	Extremely like me

1. PLEASE FILL IN EACH CIRCLE FOR EACH QUESTION ON THE ABOVE SCALE.

QUESTION	Not at all like me	Slightly like me	Moderately like me	Very like me	Extremely like me
1. I am comfortable with the appearance of my physique or figure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I would never worry about wearing clothes that might make me look too thin or overweight.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I wish I wasn't so uptight about my physique or figure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. There are times when I am bothered by thoughts that other people are evaluating (judging) my weight or muscular development negatively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. When I look in the mirror I feel good about my physique.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

QUESTION	Not at all like me	Slightly like me	Moderately like me	Very like me	Extremely like me
6. Unattractive feelings about my physique or figure make me nervous in certain social situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. In the presence of others, I feel uncomfortable about my physique or figure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I am comfortable with how fit my body appears to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. It would make me uncomfortable to know others were evaluating (judging) my physique or figure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When it comes to displaying my physique or figure to others, I am a shy person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Usually I feel relaxed when it is obvious when others are looking at my physique or figure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. When in a bathing suit I often feel nervous about how well proportioned my body is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Do you think your body is....

Much too thin	A bit too thin	About the right size	A bit too fat	Much too fat
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



3. Please tick one box for each of the following sentences to show how true it is for you in relation to walking (where you are walking for physical activity):

I COULD GO FOR A WALK TO EXERCISE EVEN IF.....

	Very true	Quite true	Not very true	Not at all true
a) I was tired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I had other things I wanted to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I had to go on my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) I had a bad day at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) I was feeling lazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) I was not very good at it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) I was sore from exercising the day before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) I wasn't in the mood.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



4. Please fill out a circle for each of the following sentences to show how true it is for you in relation to any other form of physical exercise (remember this is any sport or physical activity that makes your heart beat faster and makes you get out of breath some of the time).

I COULD EXERCISE EVEN IF.....

	Very true	Quite true	Not very true	Not at all true
a) I was tired.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I had other things I wanted to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I had to go on my own.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) I had a bad day at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) I was feeling lazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) I was not very good at it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) I was sore from exercising the day before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) I wasn't in the mood.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SECTION 5.

- ❖ The following is a list of reasons why people take part in physical activities, sports and exercise.
- ❖ Keeping in mind your primary physical activity/sport, respond to each question (using the scale given), on the basis of how true that response is for you.

Please read each question and decide whether the question is not at all true for YOU (1) or very true for YOU (7). If you think that you are somewhere in between circle on the scale where you think your answer is.



Remember the questions are about YOU so try and be as honest as you can and no one will know any of your answers.

Not at all true for me						Very true for me
1	2	3	4	5	6	7

I CHOOSE TO DO PHYSICAL ACTIVITIES, SPORT OR EXERCISE BECAUSE.....

QUESTION	1 Not at all like me	2	3	4	5	6	7 Very like me
1. I want to be physically fit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. It's fun.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I like engaging in activities which physically challenge me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I want to obtain (learn) new skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I want to lose or maintain weight so I look better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I want to be with my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I like to do this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I CHOOSE TO DO PHYSICAL ACTIVITIES, SPORT OR EXERCISE BECAUSE.....

QUESTION	1 Not at all like me	2	3	4	5	6	7 Very like me
8. I want to improve existing skills (what you can do already)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I like the challenge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I want to define my muscles so that I look better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. It makes me happy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I want to keep my current skill level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I want to have more energy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I like activities which are physically challenging.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I like to be with others who are interested in this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I CHOOSE TO DO PHYSICAL ACTIVITIES, SPORT OR EXERCISE BECAUSE.....

QUESTION	1 Not at all like me	2	3	4	5	6	7 Very like me
16. I want to improve my cardiovascular fitness (the strength of my heart and lungs when exercising).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I want to improve my appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I think it is interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I want to maintain my physical strength to live a healthy life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I want to be attractive to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I want to meet new people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I enjoy this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I CHOOSE TO DO PHYSICAL ACTIVITIES, SPORT OR EXERCISE BECAUSE.....

QUESTION	1	2	3	4	5	6	7
	Not at all like me						Very like me
23. I want to maintain my physical health and well-being.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I want to improve my body shape.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I want to get better at my activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I find this activity stimulating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I feel physically unattractive if I don't.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. My friends want me to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I like the excitement of participation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I enjoy spending time with others doing this activity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



SECTION 6.

WHAT AM I LIKE.....?

- ❖ The following statements allow people to describe themselves.
- ❖ There are no right or wrong answers since everyone is different to the next person.



- First, decide which of the two statements best describes **YOU**. So, **YOU** chose either the one on the left or the one on the right.
- Secondly, for the statement you have chosen you have to decide if it is 'sort of true' or 'really true' **FOR YOU**.

EXAMPLE:

Really true for me	Sort of true for me				Sort of true for me	Really true for me
○	○	Some kids are very competitive	BUT	Other kids are not quite so competitive	○	○

Firstly, decide are **YOU** the type of person who is competitive or not so competitive. If you are competitive then look to the two circles on left hand side. If you are not so competitive then you would look to the two circles on the right hand side.

You would then fill in **ONE** circle (this is an example) for which ever statement you have chosen:

Really true for me	Sort of true for me				Sort of true for me	Really true for me
○	●	Some kids are very competitive	BUT	Other kids are not quite so competitive	○	○

REMEMBER YOU ARE ONLY MARKING ONE CIRCLE OUT OF FOUR FOR EACH QUESTION!



PART ONE

	Really true for me	Sort of true for me		Sort of true for me	Really true for me		
1.	<input type="radio"/>	<input type="radio"/>	Some kids do well at all kinds of sports	BUT	Other kids <i>don't</i> feel they are very good when it comes to sports	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	Some kids feel <i>uneasy</i> when it comes to doing vigorous physical exercise	BUT	Other kids feel confident when it comes to doing vigorous physical exercise	<input type="radio"/>	<input type="radio"/>
3.	<input type="radio"/>	<input type="radio"/>	Some kids feel they have a good looking (fit-looking) body compared to other kids	BUT	Other kids feel that compared to most, their body <i>doesn't</i> look so good	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	Some kids feel that they <i>lack</i> strength compared to other kids their age	BUT	Other kids feel that they are stronger than other kids	<input type="radio"/>	<input type="radio"/>
5.	<input type="radio"/>	<input type="radio"/>	Some kids are <i>proud</i> of themselves physically	BUT	Other kids <i>don't</i> have much to be proud of physically	<input type="radio"/>	<input type="radio"/>
6.	<input type="radio"/>	<input type="radio"/>	Some kids are often unhappy with themselves	BUT	Other kids are pretty pleased with themselves	<input type="radio"/>	<input type="radio"/>
7.	<input type="radio"/>	<input type="radio"/>	Some kids wish they could be a lot better at sport	BUT	Other kids feel that they are good enough at sport	<input type="radio"/>	<input type="radio"/>
8.	<input type="radio"/>	<input type="radio"/>	Some kids have a lot of stamina for vigorous physical exercise	BUT	Other kids soon get out of breath and have to slow down	<input type="radio"/>	<input type="radio"/>

	Really true for me	Sort of true for me			Sort of true for me	Really true for me
9.	<input type="radio"/>	<input type="radio"/>	Some kids find it <i>difficult</i> to keep their bodies looking good physically	BUT	Other kids find it easy to keep their bodies looking good physically	<input type="radio"/>
10.	<input type="radio"/>	<input type="radio"/>	Some kids think that they have stronger muscles than other kids their age	BUT	Other kids feel that they have weaker muscles than other kids their age	<input type="radio"/>
11.	<input type="radio"/>	<input type="radio"/>	Some kids don't feel very confident about themselves physically	BUT	Other kids feel really good about themselves physically	<input type="radio"/>
12.	<input type="radio"/>	<input type="radio"/>	Some kids are happy with themselves as a person	BUT	Other kids are not happy with themselves	<input type="radio"/>
13.	<input type="radio"/>	<input type="radio"/>	Some kids think they could do well at just about any new sports activity they haven't tried before	BUT	Other kids are afraid they might <i>not</i> do well at sports they haven't ever tried	<input type="radio"/>
14.	<input type="radio"/>	<input type="radio"/>	Some kids don't have much stamina and fitness	BUT	Other kids have <i>lots</i> of stamina and fitness	<input type="radio"/>
15.	<input type="radio"/>	<input type="radio"/>	Some kids are pleased with the appearance of their bodies	BUT	Other kids wish that their bodies looked in better shape physically	<input type="radio"/>

	Really true for me	Sort of true for me			Sort of true for me	Really true for me
16.	<input type="radio"/>	<input type="radio"/>	Some kids lack confidence when it comes to strength activities	BUT	Other kids are very confident when it comes to strength activities	<input type="radio"/>
17.	<input type="radio"/>	<input type="radio"/>	Some kids are very satisfied with themselves physically	BUT	Other kids are often dissatisfied with themselves physically	<input type="radio"/>
18.	<input type="radio"/>	<input type="radio"/>	Some kids don't like the way they are leading their life	BUT	Other kids like the way they are leading their life	<input type="radio"/>
19.	<input type="radio"/>	<input type="radio"/>	In games and sports some kids usually watch instead of play	BUT	Other kids usually play rather than watch	<input type="radio"/>
20.	<input type="radio"/>	<input type="radio"/>	Some kids try to take part in energetic physical exercise whenever they can	BUT	Other kids try to avoid energetic exercise if they can	<input type="radio"/>
21.	<input type="radio"/>	<input type="radio"/>	Some kids feel that they are often admired for their good-looking bodies	BUT	Some kids feel that they are seldom admired for the way their bodies look	<input type="radio"/>
22.	<input type="radio"/>	<input type="radio"/>	When strong muscles are needed some kids are first to step forward	BUT	Other kids are the last to step forward when strong muscles are needed	<input type="radio"/>

	Really true for me	Sort of true for me			Sort of true for me	Really true for me
23.	<input type="radio"/>	<input type="radio"/>	Some kids are unhappy with how they are and what they can do physically	BUT	Other kids are happy with how they are and what they can do physically	<input type="radio"/>
34.	<input type="radio"/>	<input type="radio"/>	Some kids like the person they are	BUT	Other kids often wish they were someone else	<input type="radio"/>
25.	<input type="radio"/>	<input type="radio"/>	Some kids feel that they are better than others their age at sport	BUT	Other kids don't feel they can play as well	<input type="radio"/>
26.	<input type="radio"/>	<input type="radio"/>	Some kids have to quit running and exercising because they get tired	BUT	Other kids can run and do exercise for a long time without getting tired	<input type="radio"/>
27.	<input type="radio"/>	<input type="radio"/>	Some kids are confident about how their bodies look physically	BUT	Other kids feel uneasy about how their bodies look physically	<input type="radio"/>
28.	<input type="radio"/>	<input type="radio"/>	Some kids feel that they are not as good as others when physical strength is needed	BUT	Other kids feel that they are among the best when physical strength is needed	<input type="radio"/>
29.	<input type="radio"/>	<input type="radio"/>	Some kids have a positive feeling about themselves physically	BUT	Other kids feel somewhat negative about themselves physically	<input type="radio"/>

	Really true for me	Sort of true for me			Sort of true for me	Really true for me	
30.	<input type="radio"/>	<input type="radio"/>	Some kids are very <i>happy</i> being the way they are	BUT	Other kids wish they were <i>different</i>	<input type="radio"/>	<input type="radio"/>
31.	<input type="radio"/>	<input type="radio"/>	Some kids <i>don't</i> do well at new outdoor games	BUT	Other kids are <i>good</i> at new games right away	<input type="radio"/>	<input type="radio"/>
32.	<input type="radio"/>	<input type="radio"/>	When it comes to activities like running, some kids are able to keep on going	BUT	Other kids soon have to quite to take a rest	<input type="radio"/>	<input type="radio"/>
33.	<input type="radio"/>	<input type="radio"/>	Some kids <i>don't</i> like how their bodies look physically	BUT	Other kids are <i>pleased</i> with how their bodies look physically	<input type="radio"/>	<input type="radio"/>
34.	<input type="radio"/>	<input type="radio"/>	Some kids think that they are strong and have good muscles compared to other kids their age	BUT	Other kids think that they are weaker and don't have such good muscles as other kids their age	<input type="radio"/>	<input type="radio"/>
35.	<input type="radio"/>	<input type="radio"/>	Some kids <i>wish</i> they could feel better about themselves physically	BUT	Other kids <i>always</i> seem to feel good about themselves physically	<input type="radio"/>	<input type="radio"/>
36.	<input type="radio"/>	<input type="radio"/>	Some kids are not very happy with the way they do a lot of things	BUT	Other kids think the way they do things is fine	<input type="radio"/>	<input type="radio"/>



PART TWO

**HOW IMPORTANT ARE THESE THINGS TO YOU.....?
HOW DO YOU FEEL ABOUT YOURSELF AS A PERSON....?**

	Really true for me	Sort of true for me			Sort of true for me	Really true for me
1	<input type="radio"/>	<input type="radio"/>	Some kids think it's important to be good at sports	BUT	Other kids <i>don't</i> think that how good you are at sport is that important	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	Some kids <i>don't</i> think that having a lot of stamina for energetic exercise is very important to how they feel about themselves	BUT	Other kids think that having a lot of stamina for exercise is very important	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	Some kids think that it is <i>very</i> important to have a good-looking (fit-looking) body in order to feel good about themselves as a person	BUT	Other kids <i>don't</i> think that having a good-looking body is important at all	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	Some kids think that being physically strong is <i>not</i> all that important to how they feel about themselves as a person	BUT	Other kids feel that it is <i>very</i> important to be physically strong	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	Some kids <i>don't</i> think doing well at athletics is important to how they feel about themselves as a person	BUT	Other kids feel that doing well at athletics is important	<input type="radio"/>

	Really true for me	Sort of true for me			Sort of true for me	Really true for me	
6	<input type="radio"/>	<input type="radio"/>	Some kids feel that having the ability to do a lot of running and exercising is <i>very</i> important to how they feel about themselves as a person	BUT	Other kids <i>don't</i> feel it's all that important to have the ability to do a lot of running and exercising	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	Some kids don't think that having a body that looks in good physical shape is important to how they feel about themselves	BUT	Others feel that it's very important to have a body that looks in good physical shape	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	Some kids think that having strong muscles is very important to how they feel about themselves	BUT	Others feel that it's not at all important to have strong muscles	<input type="radio"/>	<input type="radio"/>



SECTION 7

- ❖ The last questions are about dieting and the amount of time you spend taking part in non physical activities such as watching TV, on the computer, reading books or doing homework.



Please try and answer all questions honestly and remember there are no right or wrong answers!

1. Have you ever been on a diet to try and lost weight?

YES

NO

2. At the moment, are you on a diet or doing something to try and lose weight?

No, my weight is fine

No, but I should lose some weight

No, because I need to put on weight

Yes

3. DURING THE WEEK about how many hours a day do you usually watch TV (including DVD's or videos) in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

4. At the WEEKEND about how many hours a day do you usually watch TV (including DVD's or videos) in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

5. DURING THE WEEK about how many hours a day do you usually use a computer (for anything except homework) in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

6. At the WEEKEND about how many hours a day do you usually use a computer (for anything except homework) in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

7. DURING THE WEEK about how many hours a day do you usually spend doing school homework out of school hours?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

8. At the WEEKEND about how many hours a day do you usually spend doing school homework out of school hours?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

9. **DURING THE WEEK** about how many hours do you usually spend reading books or magazines in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

10. At the **WEEKEND** about how many hours do you usually spend reading books or magazines in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

11. **DURING THE WEEK** about how many hours do you usually spend just hanging out with your friends or chatting to them (either face to face or on the phone) in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

12. At the WEEKEND about how many hours do you usually spend just hanging out with your friends or chatting to them (either face to face or on the phone) in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

13. DURING THE WEEK about how many hours do you usually spend chilling or listening to music in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

14. At the WEEKEND about how many hours do you usually spend chilling or listening to music in your free time?

- | | | | |
|--------------------------|-----------------------|-----------------------------|-----------------------|
| None at all | <input type="radio"/> | About 4 hours a day | <input type="radio"/> |
| About half an hour a day | <input type="radio"/> | About 5 hours a day | <input type="radio"/> |
| About 1 hour a day | <input type="radio"/> | About 6 hours a day | <input type="radio"/> |
| About 2 hours a day | <input type="radio"/> | About 7 hours or more a day | <input type="radio"/> |
| About 3 hours a day | <input type="radio"/> | | |

SECTION 8

1. Do you think any of the following would encourage you to participate more in physical activity:

a) Access to interactive computer games (such as dance mats).	
b) Text reminders to exercise.	
c) A personal coach to help you organise what sort of exercise to do and when to do it.	
d) Keeping an online journal of your exercise which someone can comment on to make sure you are doing the right sorts of things.	
e) If more of your friends participated in physical activity.	
f) If your family participated in physical activity more often.	
g) If you could exercise while watching TV or DVDs.	
h) If you had an Mp3 player (such as an I pod) to exercise with.	

2. If you have time please write down the sorts of things that you think would help you to participate more in physical activity, you can write as many or as few as you like.

A MASSIVE THANK YOU FOR FILLING IN ALL THE QUESTIONS!!



APPENDIX B – Narrative Interview Schedule

NARRATIVE INTERVIEW SCHEDULE

INTRODUCTIONS

Introduce myself and explain the purpose of my visit

- As you know my name is Ann-Marie and I am interested in how much physical activity girls of your age do and reasons why they do it. I am also interested in how you feel about yourself and your body and if this affects how much physical activity you do.
- Explain that the session will take no more than an half an hour and just let me know if you need to go to the toilet at any point.

Recorded but strictly confidential

- Remember there are no right or wrong answers and I am here to talk about you and your experiences so you can talk as freely as you like.
- If it's ok with you I will record the chat we have today and at times I may be scribbling things down but this is only so I can remember what you have said.
- Only myself and the other teenactive researchers will get to listen to the tape but if any important issues come up that make me think you are unhappy in any way I may have to let the teachers know, does that make sense?
- And if you want to stop at any time just let me know and that's completely fine.
- Do you have anything you want to ask me? Any questions or worries? Well if you're happy then we might as well start!!

Introduce the idea of a narrative interview

- As I said I am interested in you and your physical activity behaviour. I guess I what I am really interested in is your own personal physical activity story from when you were in the last year of primary school up until now.
- So today is your chance to tell me your physical activity story and you can tell me this in any way you want ok? Does that make sense? Do you have any questions about that?

Define physical activity

- Ok, firstly I just want you to tell me what you think physical activity means?
- Confirm/adjust definition so they understand what it is.

Use physical activity as a focal point:

- Ok so I'm going to ask you to think back to when you were in your last year in primary school and this is where I want to hear all about your physical activity story, what you did, where, when, who with and so on.....

Reflective questions.....

- Any ideas why.....

- So what you're saying is.....
- So just to pick up on.....
- So what I'm hearing you say is.....
- Can you give me some reasons why.....

TOPICS TO COVER DURING NARRATIVE:

1. PRIMARY SCHOOL

QUESTION: Think back to when you were in the last year of primary school and tell me a bit about how active you were then.....

- Different types of activities in primary school
- Break-time and lunch-time in primary school
- PE lessons in primary school (how often, mixed sex classes, types of activities)

QUESTION: Could you tell me more about how you felt during primary school when you were doing physical activity....

- Feelings about themselves during physical activity in primary school
- Feelings about their body during physical activity in primary school

2. SECONDARY SCHOOL

QUESTION: Ok so now coming back to the present day and now you are in secondary school can you give me an idea as to what you do at break-time and lunch-time.....

- Different types of activities in secondary school
- Break-time and lunch-time in secondary school

3. PE LESSONS

QUESTION: So tell me about your PE lessons.....

- Mixed/single sex classes
- Preference for PE? Reasons why....
- Types of activities in PE
- Any choice of activities in PE
- Characteristics of PE teachers
- PE teachers make PE enjoyable/enhance the experience
- Always take part in PE, if not why and how do you get out of it?

4. EXTRA-CURRICULAR PHYSICAL ACTIVITY

QUESTION: Could you tell me about any other activities you take part in out of school.....

- After-school activities
- Choice of after-school activities

- Organised by?? PE teachers/active schools co-ordinators. Preference? Why?
- Evening/Weekend activities

5. WEATHER

QUESTION: Could you tell me when the best times for you to be most active are.....

- Weather influence physical activity
- How? Facilities, enjoyment.....
- Winter v Summer
- Difference in activities over the year

6. MATURATION/PUBERTY

QUESTION: When you move from being a child into a teenager there are many changes that happen, for example emotional changes, physical changes, social changes, changes in the way you think and I'd like you to tell me about any your experience of becoming a teenager.....

- Body changes since primary school (examples)
- Influence of body changes on physical activity
- Influence of body changes on choice of activities
- Influence of body changes on PE lessons

7. PHYSICAL SELF

QUESTION: How do you feel about yourself when doing physical activity.....

- Influence of body changes on overall physical self (how they feel about themselves)
- Influence of body changes on ability to do activities (competence)
- Overall changes in physical self since primary school (changes in appearance/weight concerns, changes in competence/ability, changes in physical condition)
- Feelings about themselves (physical self) whilst doing physical activity

QUESTION: Can you tell me more about how you feel about yourself when doing physical activity in front of others.....

- Feelings about themselves (physical self) whilst doing physical activity in the presence of others (friends, family, boys).....different?

Ending the session

- Give the participant the opportunity to ask any questions to myself
- Once again thank the participant and confirm again that everything they have said will be confidential and only the teenactive researchers will get to listen to the tape.

APPENDIX C – Sample transcript

Narrative transcript of Judith (10.45 am – 06.02.08)

1. **AM:** So, erm, as I said I am interested in how much activity you
2. do erm, and I am going to be making little notes here and there
3. but it's nothing to worry about, you can just talk as freely as you
4. want ok?

5. **P/T:** Ok

6. **AM:** Ok. Do you have any questions you want to ask first?

7. **P/T:** No I'm fine.

8. **AM:** You sure?

9. **P/T:** Uh huh

10. **AM:** Ok so first we're just gonna, erm, I'm going to ask you to
11. tell me what you think we mean when we talk about physical
12. activity. What you think physical activity means.

13. **P/T:** Like just sport, like football, badminton, just sports and
14. that sort of stuff.

15. **AM:** Ah ha. Anything else?

16. **P/T:** Swimming, just all that and that's it really. That's all I
17. think anyway.

18. **AM:** That's what you think?

19. **P/T:** Yep

20. **AM:** Yep that's completely fine. What we mean when we're
21. being physically active is anything that gets our heart rate going,
22. we feel a little bit out of breath, ok so that can be anything from
23. going for a brisk walk to, errrrrr, being jumping on your bed,
24. being really active or dancing. So pretty much everything
25. you've said.

26. **P/T:** Ok

27. **AM:** Yeah so just so we know what we're talking about. So I'm
28. gonna get you to think right back to when you were in primary
29. school, do you think you can think that far back?

30. **P/T:** Uh huh

31. **AM:** To P7, so when we first met you and I'd like you to talk to
32. me a little bit more about your physical activity experiences
33. when you were in primary school.

34. **P/T:** Well in primary, I used to be really active in primary, I
35. used to like, I used to be in the basketball team and I used to be
36. in the athletics team..... and I used to be really good at
37. basketball so we went to a, erm, tournament thing and we won
38. and stuff and I was better then and I used to be, we used to go
39. swimming and I used to really like that. Errrrr but then when I

40. got to high school, I don't know I just, I stopped like doing it.
41. But I used to really, I didn't care what anyone thought when I
42. was in primary when I done sport but now, I don't know I
43. just...I don't like doing it anymore.
44. **AM:** Ok so you say that when you were in primary school you
45. didn't care what anyone thought, ermmm, can you tell me a
46. little bit more about that, what do you mean you didn't care
47. about what anyone thought about what?
48. **P/T:** Like cos, in primary school, we used to have boys in our
49. class and nobody cared cos they were just our friends and stuff
50. but now when you get to high school, like, if you fancy
51. someone then it's just embarrassing trying to do PE in front of
52. them and sweaty and that, you don't wanna do that.
53. **AM:** Ok, so what I'm hearing is that you did quite a lot in
54. primary school
55. **P/T:** Uh huh
56. **AM:** Is that correct? So you did basketball, swimming...
57. **P/T:** Yeah
58. **AM:** Errm, can you tell me a little bit more about why, why you
59. were doing all these activities...
60. **P/T:** I just enjoyed them, I don't know, I just liked the feeling of
61. it when I was doing it, I just enjoyed like...like when we played
62. basketball and like you scored it just felt good and then when
63. you were just swimming you finished your lengths first it just
64. felt good doing it...I just enjoyed it.
65. **AM:** Ah ha and erm, were these activities out of school or in,
66. during your PE lessons in primary school? Can you tell me a
67. little bit more about when you did them.
68. **P/T:** It was mostly in PE and then I would go swimming as
69. well. My dad would take me swimming on Sundays, we'd go
70. swimming together, and I used to go to play tennis with Megan
71. and mum would take us up to, it's somewhere near Telford, I
72. don't know where it is, we went somewhere near there and we
73. played tennis every Monday night.
74. **AM:** Excellent
75. **P/T:** But I don't do that anymore.
76. **AM:** Ok and just going back again to when you were in primary
77. school and the types of things that you did in your PE lessons,
78. can you tell me a little bit more about that and how you felt in
79. your lessons.

80. **P/T:** Erm, we done...what did we do....we mostly done like,
81. the teacher would erm.....we'd mostly go outside and play
82. rounders and stuff but I wouldn't mind doing any of that cos I
83. enjoyed it but, what else, we would, ermmm, we would
84. sometimes have girls and boys groups and we'd play against
85. each other, different groups and we'd play football outside with
86. the boys but I didn't like football, I hated that, I wasn't good at
87. that but that was all we really done. I would play football as
88. well with the girls at break and lunch.
89. **AM:** Ok so you say you hated football but you would still play
90. with the girls
91. **P/T:** Yeah not the boys
92. **AM:** Why would you not play with the boys?
93. **P/T:** I don't know, I was, I used to be scared of the ball when it
94. came flying towards you so I used to scream and then the boys
95. are all really competitive when they're doing it and like they
96. used to shout like come on come on do it and you couldn't do it
97. cos I wasn't good at it, when I was with the girls I didn't care,
98. they were all my friends.
99. **AM:** Ok, excellent and so just moving back, no forward into
100. secondary school so you're in S2 now
101. **P/T:** Uh huh
102. **AM:** Ok could you tell me a little bit more about your physical
103. activity behaviours now and experiences now you're in
104. secondary school
105. **P/T:** I don't do any sport at all anymore, I've gave up on it. I
106. try to, I do try, I enjoy doing gymnastics cos that's an all girls
107. class. I enjoy doing gymnastics but that's it really, I don't like
108. doing anything else.....I just gave up trying I think, I don't
109. know why but I just....I don't like doing it anymore.
110. **AM:** Why, why do you not like doing the activities any more?
111. **P/T:** I'm not sure, it's just.....like I used to really enjoy
112. doing it and then when I got to high school I just, sort of
113. changed and I just didn't enjoy it any more....but I don't know
114. whether that's because we met new people, different people in
115. our class that, I don't know I just stopped liking it.
116. **AM:** Ok so it was just you stopped doing, liking it in PE is that
117. correct?
118. **P/T:** Well yeah I, yeah in first year and half way through
119. second year I still used to go to the gym with my friend from

120. Craigmount used to go up to Drumbrae but then I stopped
121. doing that as well now, I dunno...

122. **AM:** Why have you stopped?

123. **P/T:** I don't know if it's just cos I'm lazy and I can't be
124. bothered doing it anymore but like, I say to myself like I want
125. to lose weight, I want to get toned up but when it comes to it I
126. can't be bothered going up to Drumbrae or going swimming or
127. taking part in PE classes, I just can't be bothered with it.

128. **AM:** Why can't you be bothered?

129. **P/T:** It just doesn't interest me anymore, it's a bad thing to say
130. and I used to like it a lot but now, I don't know it's just weared
131. off on me.

132. **AM:** So what I'm hearing is that you probably, you don't
133. enjoy it any more, is that right?

134. **P/T:** Yeah I don't enjoy PE anymore.

135. **AM:** Is this because of the activities that are offered or is it for
136. a different reason do you think?

137. **P/T:** I'm not sure, I just, I just think it's myself I don't like it, I
138. can't be bothered with it and that any more. Like all my family
139. are really like active, my dad and my brothers go to the gym
140. all the time and my sister she's really skinny and she goes to
141. the gym as well and I want to be able to do that too but it's
142. just..... I'm not, I don't like it anymore. And I like more
143. sitting down and doing things, I like art a lot, I just like sitting
144. down and doing stuff on my computer and doing art, watching
145. TV, just lounging stuff.

146. **AM:** And do you think if your friends were doing some of the
149. activities that would help you do the, like you said before you
150. went and played tennis with Megan, do you think that would
151. help you do more activities or....

152. **P/T:** Yeah cos I asked Megan, it was yesterday we were in
153. assembly and then Mr Quinn was talking about dance and I
154. went and said do you want to go to dance on, on a Friday after
155. school and she said no I don't wanna do it so then I don't
156. wanna do it if no one else is going

157. **AM:** Ok

158. **P/T:** But I would go to dance, I like dancing if like all the rest
159. of my friends went. I would never go by myself.

160. **AM:** Why?

161. **P/T:** It's just embarrassing being there by yourself; people

162. would look at you being on your norman.

163. **AM:** Do you not think that by going there you would make

164. friends, maybe make new friends?

165. **P/T:** Mmmmm I know but I don't have the courage to do that

166. **AM:** OK and....erm, can you tell me a little bit more about

167. your PE lessons...are they mixed PE lessons or is it all girls

168. together?

169. **P/T:** It's all girls now, it used to be all boys and we used to

170. swim and I used to hate it....we used to have boys in our group

171. with us....but it's all girls now so I don't mind it.

172. **AM:** Ok and why did you hate swimming when it was all

173. boys?

174. **P/T:** Cos I don't like the shape of my body, I want to be

175. skinnier than I am but it doesn't go anywhere. I try and I say to

176. myself I'm gonna go on a diet but when it comes to it I don't

177. have the willpower.

178. **AM:** Ok so what I'm hearing you say is that, you know, you're

179. feeling quite self-conscious in front of the boys...

180. **P/T:** Yeah not in front of the girls, I don't mind in front of any

181. of them it's just boys if somebody you like or it's embarrassing

182. in front of them.

183. **AM:** Ok and just going onto sort of how you feel about your

184. body and things, can you tell me a little more about how you

185. feel about yourself when you're doing activities...I know you

186. say you don't really enjoy them but how do you feel about

187. yourself when you're doing them....in PE and stuff.

188. **P/T:**Like I don't know....erm....when we're doing it I

189. feel like other people, like I feel like I can't do what everyone

190. else is doing. Everyone else is like....Victoria Muir, she's

191. really good at gymnastics she done like a sommersault thing in

192. the air and I tried it and I ended up falling on my bum and it

193. was so embarrassing and I couldn't do it. But I can do some

194. stuff but.....it's just like I'm embarrassed to try cos everyone

195. else can do more things so it's just I don't want to try.

196. **AM:** So I'm hearing you saying that your, you compare

197. yourself to other people with regards to ability....

198. **P/T:** Yeah

199. **AM:** And then so you wont try if you don't think you're as

200. good as them is that right?

201. **P/T:** Yeah

202. **AM:** Ok and, erm, just going back to primary school obviously
203. over the past sort of 2 years you've changed quite a bit....
204. **P/T:** Yeah
205. **AM:** Can you tell me a little bit more about how you feel
206. about all the changes that have happened in the past 2 years.
207. **P/T:** What do you mean like?
208. **AM:** All changes that have happened
209. **P/T:** I got chubbier when I, from P7 I used to be quite slim
210. back then but up to second year I got chubbier. I put on a bit of
211. weight, I've got armpit hair so I have to shave now, pubic hair,
212. I've got breasts, I started to grow....just normal stuff.
213. **AM:** So you see that as quite normal....
214. **P/T:** Yeah normal stuff
215. **AM:** Yeah and can you tell me, you say you've put on, you
216. think you've put on weight can you tell me where you
217. think.....
218. **P/T:** My belly
219. **AM:** Ah ha
220. **P/T:** I've put on my belly, my legs a little bit as well but that's
221. it, just my belly mostly.
222. **AM:** Erm and how do you feel about that
223. **P/T:** I hate it
224. **AM:** You hate it?
225. **P/T:** I hate having a belly cos it's not, I don't have a huge
226. belly but I've got a belly and I don't like it cos when we go on
227. holiday and stuff and people, I wanna wear a bikini but I just
228. feel self-conscious of it....it's just like when I sit down and
229. when you stand up it looks ok but then....
230. **AM:** You get that, everyone gets that when they sit down
231. **P/T:** Yeah
232. **AM:** I get it. Errm, and, when you're doing activity do you
233. feel like these changes in your body have influenced it in any
234. way or not really
235. **P/T:** Not really just, no not really just when it comes to
236. swimming and I've got my belly, don't like it.
237. **AM:** But you say it's ok in front of girls
238. **P/T:** Yeah it's ok in front of girls, I don't mind that but if I'm
239. standing, standing next to someone who's skinny then I want
240. to look like them.
241. **AM:** Ok, right is there anything else you want to ask me or

242. talk about at all with regards to your activity?
243. **P/T**: No that's it
244. **AM**: Do you think erm, if there were more things on offer that
245. would interest you you would maybe do more activities or is it
246. just because your friends aren't doing it?
247. **P/T**: Yeah, it's just because my friends aren't doing it, I just, I
248. just can't be bothered with it anymore.
249. **AM**: Uh huh and what what about at the weekends, do you
250. think there is any time at the weekends you would do any
251. activity?
252. **P/T**: I don't do stuff like that, activity, at the weekends, I just
253. go out with my friends, we go to the gyle and we go up town
254. just we hang about at each others houses, watch movies,
255. computer, food...
256. **AM**: uh huh
257. **P/T**: Just not, we don't do any exercise, we walk places though
258. **AM**: That's good, that's exercise
259. **P/T**: But then we hop on a bus as well so...
260. **AM**: Oh well. Ok I think that's about it for today, erm, are you
261. sure there's nothing you want to ask me?
262. **P/T**: No
263. **AM**: How did you find that?
264. **P/T**: That was fine yeah.

APPENDIX D – Summary of ordered themes for each participant

Table D.1: Summary of ordered themes for Judith

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Did activities in PE	Activities in PE	→	→	Utilised opportunities to be active
Play rounders in PE				
Played football at break-time/lunch-times	Activities at break/lunch times	→	→	
Swimming after-school	Extra-curricular activities	→	→	
In basketball team				
In athletics team				
Swimming with dad at weekends	Activities out of school	→	→	
Tennis during evenings/weekends				
Tennis every Monday				
Gym with friend after-school				
Involvement of friends in PA	Peer involvement	Peer support	Social support	Supportive PA environment
Swimming with dad at weekends	Family involvement in PA	Family support		
Mum took them to tennis	Family support			
Didn't matter that boys were in PE class in primary school	Comfortable with presence of boys during PE	Comfortable in PA environment	→	
Football with girls	Comfortable playing football with the girls			
Lack of PA with boys	Comfortable just playing with girls			
Perception of being really active in primary school	Sees self as active	→	→	
Perceived competence/ability	Competence	→	→	
Won competitions				
Sense of achievement/mastery				
Not self-conscious	Comfortable	→	→	

doing PA	with self when active			
Good feeling when doing PA	Positive feelings from doing PA	→	→	
Enjoyment	Enjoyment	→	→	
Enjoyment of PE				
Didn't care that she couldn't do it in front of friends	Lack of self-presentational concerns	→	→	

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
PA participation stopped in secondary school	Stopped being active in secondary school	Lack of PA out of school	Lack of utilising opportunities to be active
Don't do tennis anymore	Stopped doing tennis		
Doesn't do any sport anymore	Stopped doing sport		
Stopped going to gym with friend	Stopped going to gym		
Doesn't do activity at weekends	No activity at weekends		
Unsure about reasons for not doing physical activity	Unsure as to why not active		
Influence of new social group on PA	Social influence	Lack of social support	Unsupportive PA environment
Friends and her don't do exercise at weekends	Social influence		
Lack of peer support	Lack of peer support		
Needs peer support for PA	Importance of peer support		
Never go by herself			
Hate swimming in the presence of boys	Hates swimming in front of boys	Uncomfortable in PA environment with boys	
Embarrassed/self-conscious in front of boys**	Embarrassment in front of boys		
Embarrassing doing PE in front of boys**			
Boys in PE	Presence of boys in PE		
Prefers doing other sedentary activities	Preference for alternative activities	→	Alternative activities to being active
Prefers doing art			
Prefers sitting at her			

computer doing art			
Prefers watching TV			
Prefers just lounging stuff			
Socialise with friends instead of PA			
Watch movies with friends instead of PA			
Plays on the computer with friends instead of PA			
Has food with friends instead of PA			
Lack of enjoyment	Lack of enjoyment	Overall lack of enjoyment/interest in PA	Negative sense of self when active
Doesn't enjoy doing anything else except gymnastics	Only enjoys gymnastics		
Lack of enjoyment in PE	Lack of enjoyment in PE		
Stopped liking PA	Doesn't like PA		
Lack of interest in PA	No interest in PA		
Given up being active	Lack of desire to be active	Lack of enthusiasm/motivation to be active	
Perceived change in self			
Too lazy to do PA	Laziness		
Too lazy to go up to gym in Drumbrae			
Too lazy to go swimming			
Too lazy to participate in PE			
Too lazy to do PA			
Gets on bus instead of walking			
Lack of confidence to do activity alone	Lack of confidence doing PA alone	Lack of confidence	
Embarrassment at doing activity alone	Embarrassment at doing PA alone	Dislike doing PA alone	
Embarrassed to try new things in PA	Embarrassment in PA situation	Self-presentational concerns	
Embarrassed/self-conscious in front of boys**	Embarrassment doing PE in front of boys		
Embarrassing doing PE in front of boys**			
Self-conscious of tummy when	Body concerns	→	

swimming			
Perceived lack of competence/ability compared to others	Lack of competence	→	
Example of perceived lack of competence/ability compared to others			

**** indicates meaning unit label categorisation into two different themes**

Table D.2: Summary of ordered themes for Sophie

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)					
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes	
Dancing in primary school	Activities out of school	→	→	Utilised opportunities to be active	
Frequency of dancing					
Variety of types of dance					
Horse-riding after-school					
Involvement in dancing shows/competitions					
Walk with friends at weekend**	Activities in PE	→	→		
Basketball in PE					
Gymnastics in PE					
Used apparatus and assault course in PE					
Games (e.g. rounders) in PE	Active travel to/from school	→	→		
Walk to school					
Walk from school					
5-10 minute walk to school	Peer involvement in PA	Peer support	Social support	Supportive PA environment	
Involvement of friends in PA					
Be with friends in PE					
Walk with friends at weekend**		Family involvement in PA			Family support
Active with brother					
Horse-riding with Aunty					
Walk with brother to school					
Positive relationship with dance teacher	Support of dance teacher	→			
Known primary school peers for 7 years so not self-conscious	Familiar with peers so not self-conscious	→	Comfortable in PA environment		
PE ok because knew everyone in primary school	Familiar with peers	→			

Other activities for fun	PA as Fun	Enjoyment	→	Positive sense of self when active		
Dancing was fun						
Having fun and exercising	Interest/excitement of PA					
Excitement/ interest about dancing shows (PAST)						
Increased/continued interest/excitement about dancing (PAST)	Enjoyment					
Enjoyment	Enjoyment of PE					
Enjoyment of PE						
Positive view of PE						
Enjoyment of using the apparatus and assault course in PE	Competence				→	→
Development of competence						
Good feeling when dancing	Positive feelings when doing PA				→	→
Known primary school peers for 7 years so not self-conscious	Not self-conscious				→	→
Dancing since she was very young	Sustained interest in dancing	→	→	Sustained interest in PA		

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Unaware of dance opportunities after-school	Lack of awareness of PA opportunities in school	→	Lack of knowledge
Lack of understanding of activity rules	Lack of understanding of activity	→	
Prefers to be out with friends so not got much time	Spending spare time with friends has priority	→	Alternative priorities
Paper-round has priority over PA	Part-time job has priority	→	
Not comfortable dancing in front of boys	Uncomfortable dancing in front of boys	Uncomfortable in PA environment with boys	Unsupportive PA environment
Not comfortable dancing in front of boys specifically			

Doesn't know everyone that well in secondary school so harder to do PA	Unfamiliar social environment when doing PA	Unsupportive social environment for PA	
Need equipment for playing hockey	Need equipment for certain activities	Lack of resources	
Family issues stopped horse-riding	Lack of family support	Lack of social support	
Lack of enjoyment	Lack of enjoyment	→	Negative sense of self when active
Doesn't like hockey			

** indicates meaning unit label categorisation into two different themes

Table D.3: Summary of ordered themes for Claire

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Started netball club in primary school	Extra-curricular activities	→	→	Utilised opportunities to be active
Walked to/from school	Active travel to/from school	→	→	
Mile/mile and a half walk to school		→	→	
Dodgeball in PE in primary school	Activities in PE	→	→	
Running about in primary school	Active in primary school	→	→	
Perceived joining netball as an opportunity to get involved in something	Aware of opportunities for PA participation	→	→	
Walk to school alone	Comfortable being active alone	→	→	Positive sense of self when active
Friends did netball	Involvement of friends in PA	Peer support	Social support	Supportive PA environment

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Doesn't do much besides PE	Lack of PA except PE	→	→	Lack of utilising opportunities to be active
Admission of lack of PA outside PE				
No after-school club participation	Lack of extra-curricular activities	→	→	
No after-school				

PA participation				
Lack of sport at weekends	Lack of weekend PA	→	→	
Sit and talk during break/lunch times	Lack of activity at break/lunch	→	→	
Stay inside during break/lunch times				
Friends aren't interested in PA/not 'sporty'	Lack of peer interest in PA	Lack of peer support	Lack of social support	Unsupportive PA environment
Other peers not sporty at all				
Lack of social encouragement to be sporty	Lack of peer encouragement to be sporty			
Peers know she's not sporty	Negative peer expectations			
Peers in PE expect her not to be sporty	Pressure to be competent from peers			
Peer pressure to be competent at PA				
Expectation/pressure be able to do PA from peers	Pressure to be competent from boys			
Expectation/pressure to be able to do PA from boys				
Perception that boys think girls should be fit	Peer pressure difficult			
Finds pressure to do well at PA difficult				
Family not 'sporty'	Lack of family PA	Lack of family support		
Perception of not doing much PA with family	Lack of family involvement in PA			
Uncomfortable doing PA in front of boys	Uncomfortable doing PA front of boys	Uncomfortable in PA environment with boys	→	
Perception of a 'sporty' school	Uncomfortable in 'sporty'	Uncomfortable in competent PA	→	

environment	environment	environment		
Doesn't like swimming because it's exposed**	Uncomfortable doing swimming	Uncomfortable in PE environment	→	
Focus on individual when swimming**				
Difficult to do gymnastics in front of people**	Uncomfortable doing gymnastics			
Doesn't like swimming because it's exposed**	Self-presentational concerns when swimming	Self presentational concerns	→	Negative sense of self when active
Focus on individual when swimming**				
Difficult to do gymnastics in front of people**	Self-presentational concerns when doing gymnastics			
Difficult to do PA in front of others	Self-presentational concerns when doing PA in front of others			
Doesn't like being watched by others when doing PA				
Negative comparison of PA ability to peers	Lack of competence compared to peers	Lack of competence	→	
Lack of competence/ability	Lack of competence			
Focus on skills when swimming	Lack of skills when swimming			
PE not one of strongest subjects	Lack of competence/ability in PE			
Finds it difficult to be sporty	Lack of competence to be sporty			
Dislikes swimming in PE	Lack of enjoyment of swimming	Lack of enjoyment	→	
No other interest for future PA	Lack of enthusiasm to			

participation	be active			
Bad asthma makes PA difficult	Illness/health barriers	→	→	Physical health barriers
Weak arm makes certain PA difficult				

**** indicates meaning unit label categorisation into two different themes**

Table D.4: Summary of ordered themes for Sarah

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Part of football team in primary school	Extra-curricular activities	→	→	Utilised opportunities to be active
Football game every Saturday				
Football training every Friday				
Kept on with football whenever possible				
Joined football team in primary seven				
Did lots of training/running in football				
After-school activity club				
Joined after-school clubs				
After-school club once/twice a week				
After-school club once/twice a week				
Ran around in primary school	Active in primary school	→	→	
Did lots of PE	Activities in PE	→	→	
Running in PE				
Make up routines using apparatus in PE				
Practiced football in garden	Activities out of school	→	→	
Playing games at break/lunch times	Activities at break/lunch times	→	→	
Running around at break/lunch times				
Walking during break/lunch times				
Always doing something at break/lunch times				
Active with large social group at				

break/lunch times				
Walking inside if cold at break/lunch times				
After-school club good	Enjoyed after-school club	Enjoyment	→	Positive sense of self when active
Liked running around a lot	Enjoys PA			
Liked football as a way to exercise	Enjoys football to exercise			
Really liked PE	Enjoyment of PE			
PE was good				
After-school club was fun	PA as fun			
PE lessons fun				
Playing football was fun				
Liked being part of a team	Enjoyment of social PA			
Enjoyed being part of a group				
Enjoyed winning things	Enjoyment of winning			
Liked winning for the school				
Enjoyed beating her peers				
Managed to slim down a bit	Positive body image from PA			
Preferred PE to other lessons	Preference of PE	Motivation to be active	→	
Preferred running than sitting down	Preference of being active			
Work with a partner to make up routines in PE	Peer involvement in PE	Peer support	Social support	Supportive PA environment
Lots of friends on football team	Peer involvement in football			
After-school club leaders show you how to keep fit	Leader support for PA	Leader support		
Given incentives to keep taking part in after-school club	Incentives to be active/stay active	→	→	

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Doesn't do as much PA at break/lunch times in secondary school	Lack of PA at break/lunch times	→	→	Lack of utilising opportunities to be active
Go inside when it's cold at break/lunch times				
Didn't chose PE as a subject	Didn't choose to do PE	→	→	
Doesn't like exercising	Lack of enjoyment of PA	Lack of enjoyment	→	Negative sense of self when active
Doesn't like hockey	Lack of enjoyment of hockey			
Doesn't enjoy hockey				
Doesn't enjoy hockey game				
Doesn't enjoy football anymore as much	Lack of enjoyment of football			
Doesn't know why she doesn't enjoy football now	Unsure as to reasons for lack of enjoyment of football			
Didn't chose PE as a subject	Lack of interest in PE			
Felt everyone was looking at her	Self-presentational concerns in PE environment	Self-presentational concerns	→	
Didn't like everyone looking at her in PE				
Doesn't feel comfortable doing certain activities in front of others				
Friend didn't like everyone looking at her in PE				Shared experience of self-presentational concerns in PE environment

Old team mates play for different football teams	Lack of friend involvement in PA	Lack of peer support	Lack of social support	Unsupportive PA environment
Didn't like being in a class with skinny peers	Uncomfortable in PE environment with skinny peers	Uncomfortable in PE environment	→	
Not comfortable in PE environment with certain people				
Playing games at break/lunch time would seem weird in secondary school	Playing games at break/lunch not part of school culture	Being active at break/lunch not part of school culture		
Don't see people playing games at break/lunch times at secondary school				
Feels she has grown out of playing games at break/lunch times				
Going to gym with friends was never organised	→	→	→	Lack of organisation of activities
Always getting hit by ball	Injury doing PA	→	→	Physical health barriers
Doesn't understand hockey	Lack of understanding of activity	→	→	Lack of knowledge
Didn't know anything about football training	Lack of knowledge about training	→	→	
Didn't get to play football because didn't get told the training times	Lack of knowledge/awareness of PA opportunities at school	→	→	
Doesn't know much about football club at secondary school				

** indicates meaning unit label categorisation into two different themes

Table D.5: Summary of ordered themes for Louise

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Running club at primary school	Extra-curricular activities	→	→	Utilised opportunities to be active
Running club once a week				
Run for 2-3 miles in running club				
Running club once a week				
Running club organised by the primary school				
Took part in fun run				
Football at primary school				
Football training on a weekday				
Football game at the weekend				
Football club organised by the primary school				
Horse-riding every 2 weeks	Activities out of school	→	→	
Horse-riding for 1-2 hours				
Horse-riding out of school				
Climbing frames in PE	Activity in PE	→	→	
Gymnastics in PE				
Dodgeball in PE				
Badminton in PE				
Skipping in PE				
Tennis in PE				
Football in PE				
Hockey in PE				
PE at primary school				
Chasing game at break/lunch times tiring	Active at break/lunch times	→	→	

Boys chased girls at break/lunch times					
Joined horse-riding at same place as sister's friend	Shared opportunity for PA	→	Social support	Supportive PA environment	
Went horse-riding with sister	Family involvement	Family support			
Boys chased girls at break/lunch times	Peer involvement in PA	Peer support			
All girls football team	All girls involvement in PA	Girls-only environment	→		
Formed an all girls team instead					
Used tarmac outside to do activities in PE	Physical environment conducive to PA	Physical environment facilitators	→		
Activities in primary school fun	PA as fun	Enjoyment	→		Positive sense of self when active
Liked football because it was really fun					
Liked football because it's a team game	Enjoyment of team involvement				
Liked running because dad was a good runner	Enjoyment of running				
Liked horse-riding because liked horses	Enjoyment of horse-riding				
Used to want to be a horse-rider					
Scoring in football made her happy	Enjoys being competent at football				
Scoring in football gave her a big high					
Liked the high from scoring in football					
Captain of football team	Positive role in team			Competence	
Came second in a fun run	Sense of achievement				

Liked running because started from when young	Sustained interest in running	→	→	Sustained interest in PA
Always done running				

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
No activities in secondary school	Lack of PA in secondary school	→	→	Lack of utilising opportunities to be active
Doesn't do any other activities	Unsure about what is involved in dance lessons	→	→	Lack of knowledge
Unsure about what is involved in the dancing lessons	Difficult finding PA opportunities	Unsupportive PE environment	→	Unsupportive PA environment
Difficult to find a team to play for	Lack of PA opportunities at secondary school			
No girls football team at secondary school				
Horse-riding is a distance away	Travel constraints on PA opportunities	Physical environment barriers	→	
Wanted someone to play in a football team with	Lack of peer support	→	Lack of social support	
Lonely doing activity alone				
Sister stopped horse-riding	Lack of family involvement	Lack of family support		
Difficult for mum to take her horse-riding because of new baby	Family issues barrier to PA			
Feel like everyone's watching if dancing alone	Self-presentational concerns	→	→	
Never got round to	Lack of motivation to	Lack of enthusiasm/mot	→	

looking for a football team	find PA opportunities	ivation to be active		
Can give up more easily on activity if doing it alone	Lack of motivation in doing PA alone			

**** indicates meaning unit label categorisation into two different themes**

Table D.6: Summary of ordered themes for Joan

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Gymnastics in PE	Activities in PE	→	→	Utilised opportunities to be active
Football in PE				
Basketball in PE				
Basketball and gymnastics in PE				
Hockey in PE				
Football after-school	Extra-curricular activities	→	→	
Frequency of after-school football				
After-school basketball				
Active games during break/lunch times	Activities at break/lunch times	→	→	
Gym and swimming at weekends	Activities out of school	→	→	
Wanted to go to after-school football	Motivation to be active	→	→	Positive sense of self when active
Likes running about	Enjoys running about	Enjoyment	→	
Likes playing games	Enjoys playing games			
Liked doing different activities in PE	Enjoyment of variety in PE			
Enjoyed using the gymnastic equipment	Enjoyment of use of equipment in PE			
Didn't think about how she felt when doing PA	Comfortable with self when active			

Involvement of friends in PA	Peer involvement	Peer support	Social support	Supportive PA environment
Familiar environment for doing PA	Familiar environment for PA	Comfortable in PA environment	→	
Knew people since primary 1				
Limited PA with boys	Lack of boys in PA environment			

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Standing/talking during break/lunch times	Lack of activity at break/lunch times	→	→	Lack of utilising opportunities to be active
Doesn't take PE as a subject**	Lack of PA in PE	→	→	
No-one else being active at break/lunch	Playing games at break/lunch not part of school culture	Being active at break/lunch not part of school culture	→	Unsupportive PA environment
Lack of proper teaching in PE	Lack of teaching in PE	Unsupportive PE environment	→	
Dislikes doing gymnastics routines alone**	Uncomfortable doing gymnastics	Uncomfortable in PE environment	→	
Embarrassed doing gymnastics routine alone**				
Preference for other subjects	Preference for alternative activities	Prefers alternative subjects to PE	→	Alternative activities to being active
Boring/lack of interest in football	Lack of interest in football	Lack of interest in PA	→	Negative sense of self when active
Boring/lack of interest in PE	Lack of interest in PE			
Boring aspects of PE as a subject				
Doesn't take PE as a subject**				
Dislikes doing	Self-	Self-	→	

gymnastics routines alone **	presentational concerns doing gymnastics	presentational concerns		
Embarrassed doing gymnastics routine alone**				
Embarrassed to run around at break/lunch times	Self-presentational concerns running at break/lunch times			
Lack of confidence doing PA	Lack of confidence	→	→	

**** indicates meaning unit label categorisation into two different themes**

Table D.7: Summary of ordered themes for Debbie

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Judo in primary school	Activities out of school	→	Utilised opportunities to be active
Judo was something to do			
Walking in primary school			
Started judo instead of tae kwon do at Meadowbank**			
Sometimes ran about at break/lunch times	Activities at break/lunch times	→	
Play games at break/lunch times			
PE in primary school	Activities in PE	→	
Play tig at start of PE lesson			
Football in PE			
Gymnastics in PE			
Basketball in PE			
Lots of different activities in PE			
Enjoys views when walking	Enjoyment of views when walking	Enjoyment	Positive sense of self when active
Judo was good at the start	Judo good		
Enjoyed some of judo	Enjoyed judo		
Enjoyed getting the chance to run around in PE	Enjoyed chance to run about in PE		
Enjoyed playing games	Enjoyed playing games		
Enjoyed learning new stuff	Enjoyed learning new skills		
Enjoyed learning new moves	Enjoyed learning new moves		
Able to go to Judo on a Monday at Meadowbank (local sports centre)	Use of local sport facilities	Physical environment facilitators	Supportive PA environment

Started judo instead of taekwon do at Meadowbank**			
Walking up Arthur's seat (use of local environment)	Use of local environment to be active		
Going to go to taekwon do with friend	Peer support	Social support	
Sometimes goes walking with friends			
Went to judo with sister	Family support		
Sometimes goes walking with mum	Family involvement		

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Doesn't like hockey	Lack of enjoyment of hockey	Lack of enjoyment	Negative sense of self when active
Hockey is boring			
Inside at break/lunch times	Lack of activity at break/lunch times	→	Lack of utilising opportunities to be active
Go shopping at weekends	Alternative activities at weekends	→	Alternative activities to being active
Go to cinema at weekends			

** indicates meaning unit label categorisation into two different themes

Table D.8: Summary of ordered themes for Sam

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Netball after-school	Extra-curricular activities	→	Utilised opportunities to be active
Netball games on a Tuesday afternoon			
Netball in P6 and P7			
Football in primary school			
Went out on bike	Activities out of school	→	
Gymnastics in PE	Activities in PE	→	
Football in PE			
Basketball in PE			
Did gymnastics quite a lot in PE			
Played football at break/lunch times	Activities at break/lunch times	→	
Netball was more activities to do	Opportunity for PA	→	
Friends started playing netball	Peer support	Social support	Supportive PA environment
Only a couple of friends did football			
Sometimes biked with dad	Family involvement		
Felt confident in primary school because not around as many people as in secondary school**	Small social group	Supportive social environment	
Biked along the canal (local environment)	Use of local environment to be active	Physical environment facilitators	
Liked playing netball	Enjoyment of netball	Enjoyment	
Liked playing football	Enjoyment of football		
Liked watching football			
PA was fun	PA as fun		
Netball was fun			

Felt good doing PA	Positive feeling when doing PA	→	
Just carried on with netball	Continued interest in netball	Motivation to be active	
Felt confident in primary school because not around as many people as in secondary school**	Confident in primary school	→	

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Not confident at secondary school because around more people**	Large social group	Unsupportive social environment	Unsupportive PA environment
PE more strict in secondary school	Strict environment in PE	Unsupportive PE environment	
<u>Just</u> does football out of school	Lack of extra-curricular activities	→	Lack of utilising opportunities to be active
<u>Just</u> does football and goes on bike			
Not as active as in primary school	Lack of PA compared to primary school	→	
Preferred primary school because more active			
Standing about talking at break/lunch times	Lack of activity at break/lunch times	→	
Activities at break/lunch times different at secondary school			
Everyone talks inside instead of going outside			
Not confident at secondary school because around more people**	Lack of confidence at secondary school	Lack of confidence	Negative sense of self when active
Doesn't feel as confident with friends	Lack of confidence with friends		
Doesn't like being self-conscious in front of people when doing PA	Self-conscious in PE environment	Self-presentational concerns	
Gets nervous when showing in front of people when doing PA	Nervous in PE environment doing PA		

Preferred primary school because enjoyed sports more	Lack of enjoyment of sports in secondary school	Lack of enjoyment	
Doesn't enjoy the sports as much in as in primary school			
Lack of time to do PA compared to primary school	→	→	Lack of time
Visits friends at weekends	→	→	Alternative activities to being active
On bike less because more homework in secondary school	Homework has priority	→	Alternative priorities
Homework in secondary school which didn't have in primary school so doesn't do as much sport as in primary school			
Body feels different running about	Physical changes influence PA	→	Physical health barriers

**** indicates meaning unit label categorisation into two different themes**

Table D.9: Summary of ordered themes for Carol

Meaning unit labels	First-order themes	Second-order themes	Overall themes
Did running in PE at primary school	Activities in PE	→	Utilised opportunities to be active
PE twice a week at primary school			
Running around the field in PE at primary school			
Tennis in PE			
Running a bit at break/lunch in primary school	Activities at break/lunch times	→	
Physical activities at camp in P7	Activities at school camp	→	
Kayaking at activity camp in P7			
Abseiling at activity camp in P7			
Played badminton once a week	Activities out of school	→	
Played badminton out of school			
Started badminton in primary school			
Started swimming lessons when young			
Swimming after badminton during week			
Swimming at weekends			
Badminton at weekends			
Some people did cross-country with an after-school club	Aware of opportunities for PA participation	→	
Started going to badminton on own	Comfortable being active alone	→	Positive sense of self
Only really liked badminton in PE	Enjoyed badminton	Enjoyment	
Swimming ok	Swimming 'ok'		
In pool most of time so not bothered about having a male PE teacher**	Lack of body concerns when swimming in front of male teacher	Lack of self-presentational concerns	
Winning all badminton games in beginners class	Sense of achievement/competence	→	

Wanted to go to a badminton class	Motivation to be active	→	
Started playing badminton with family	Family involvement	Social support	Supportive PA environment
Whole class had to do football so was ok	Group involvement	Comfortable in PA environment	
Worked with similar people in PE in primary school	With peers of similar ability	→	
Never thought about having a male PE teacher in swimming	Unconcerned about male teacher	→	
In pool most of time so not bothered about having a male PE teacher**			
Specialist tennis teacher in PE	Provision of specialist teachers	Supportive PE environment	
Specialist tennis equipment provided by specialist teachers in primary school	Provision of specialist equipment		

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Rehearsals for show at weekends	Alternative activities at weekends	→	→	Alternative activities to being active
Talking at break/lunch in secondary school	Lack of activity at break/lunch times	→	→	Lack of utilising opportunities to be active
Mostly talking at break/lunch times				
Lack of movement in show	Lack of movement	Lack of PA at weekends	→	
Admission of not much PA at weekends	Perception of lack of weekend PA			
Lack of teaching of skills in PE	Lack of teaching in PE	Unsupportive PE environment	→	Unsupportive PA environment
Just left to play games in PE				
Not taught as much in PE as in primary	Activity rules should be explained in PE			
Feels it would be good if badminton rules	Lack of preferred options/choice in			

were explained in PE lesson	PE			
Usually only one option in PE she wants to do				
Dislikes other option of football in PE				
Dislikes other option of basketball in PE				
Have to do PE	Lack of peer interest in PE	Lack of peer support	Lack of social support	
Friends didn't like PE				
Some people see PE as unimportant	Lack of peer competence at PE			
Friends weren't good at PE	Lack of peer involvement in PA			
Friends don't do badminton out of school	Peers complain at lack of competence			
Peers in team get annoyed if you do something wrong	Boys complain at lack of competence	Uncomfortable in PA environment with boys	→	
If you're incompetent at an activity boys complain at you				
Boys get annoyed if you don't go fast enough in swimming				
Feels boys think she's too slow at swimming	Dislikes PE with boys			
Wouldn't do football because mostly boys do it				
Dislikes having swimming with boys				
Disliked swimming with boys because they're competitive	Dislikes PE environment with boys because too competitive	Uncomfortable in competent PA environment	→	
Doesn't like it that boys are more competitive than				

girls				
Most boys competitive	Lack of competence embarrassing in front of 'competent peers'			
Embarrassing if doing PA wrong in front of people who are good at sport**	Increased awareness of self-conscious environment in PE	Uncomfortable in PE environment	→	
Other peers self-conscious about their legs				
Other people covered up when they did swimming in PE	Self-presentational issues dependent on activity	Self-presentational concerns	→	
How she feels doing PA in front of others depends on the activity	Dislike of doing PA alone			
Wouldn't do football alone				
Doesn't want to be on own in PE	Lack of competence at PE	Lack of competence	→	Negative sense of self when active
Still thinks she's not good at PE	Lack of competence at other sports			
Dislikes other sports because not good at them**	Lack of competence embarrassing			
Embarrassing when incompetent at PA				
Embarrassing if doing PA wrong in front of people who are good at sport**	Boys more competent			
Boys faster at swimming in races	Lack of competence compared to peers at football			
Not as good as some friends at football	Lack of competence at badminton			
Not the best person in badminton class				

Not always winning games now	Lack of enjoyment of football	Lack of enjoyment	→	
Dislikes football				
Wouldn't do football because dislikes it	Unsure why she dislikes football			
Doesn't know why she dislikes football	Lack of enjoyment of competitive sports			
Dislikes competitive sports	Lack of enjoyment of sports			
Dislikes other sports because not good at them**	Lack of enjoyment of badminton with incompetent friends			
Dislikes doing badminton with friends that can't do it				
Gets annoyed when friends don't play to proper rules in badminton	Lack of enjoyment of hockey			
Doesn't like hockey in PE because gets a sore back from bending over in hockey**	Lack of energy	→	→	Physical health barriers
Gets tired quickly doing running	Injury doing PA	→	→	
Doesn't like hockey in PE because gets a sore back from bending over in hockey**				

** indicates meaning unit label categorisation into two different themes

Table D.10: Summary of ordered themes for Michelle

Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes	
Football with school	Extra-curricular activities	→	→	Utilised opportunities to be active	
Football once a week with school					
Hockey with school					
Started playing hockey					
Hockey after school					
Hockey club on Sunday	Activities out of school	→	→		
Hockey training on Sunday					
Football match at weekends					
Football with a club					
Football once a week with a club					
Mucking about/unstructured play in primary school	Activities at break/lunch time	→	→		
Played football at break/lunch in primary school					
Played football all the time at break/lunch in primary school					
Running about in primary school	Active at primary school	→	→		
Gymnastics in PE	Activities in PE	→	→		
Hockey in PE					
Gymnastics and hockey were main activities in PE					
Running in PE					
Liked the idea of playing hockey	Desire/intention to play hockey	Motivation to be active	→		Positive sense of self when active

Liked the idea of playing tennis	Desire/intention to play tennis				
Felt good doing football	Positive feelings from football	Positive feelings when doing PA	→		
Felt good doing PA in primary school	Positive feelings from PA				
Enjoyed football	Enjoyment of football	Enjoyment	→		
Wanted to get better at tennis	Desire to be competent at tennis	Competence	→		
Playing tennis with mum and dad inspired desire to improve					
Felt she could actually play football					Competent at football
More competent playing with girls of similar 'strength'					Competent at football with girls
First to start playing football on own	Comfortable being active alone	→	→		
Played tennis with mum and dad	Family involvement	Family support	Social support		
Joined tennis club with mum and dad					
Mum and dad good at tennis	Family competence				
Other girls started playing football after she started	Peer involvement	Peer support			
Girls joined in football with boys	Boys involvement in football				
Joined a girls-only football club	Girls-only PA	Girls-only environment		→	

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Sit and chat at break/lunch at secondary school	Lack of activity at break/lunch times	→	→	Lack of utilising opportunities to be active

Meets up with friends at weekends	Alternative activities at weekends	→	→	Alternative activities to being active
Nobody plays football at break/lunch in secondary school	Playing games at break/lunch not part of school culture	Being active at break/lunch not part of school culture	→	Unsupportive PA environment
Thinks more girls would do swimming if girls only	Uncomfortable environment with boys when swimming	Uncomfortable in PA environment with boys	→	

** indicates meaning unit label categorisation into two different themes

Table D.11: Summary of ordered themes for Angela

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)				
Meaning unit labels	First-order themes	Second-order themes	Third-order themes	Overall themes
Swimming twice a week in P7	Extra-curricular activities	→	→	Utilised opportunities to be active
Gymnastics in PE	Activities in PE	→	→	
Netball in PE				
Hockey in PE				
Dancing on Friday night	Activities out of school	→	→	
Sometimes football game on Saturday				
Football on Thursday night				
Played games at break/lunch in primary	Activities at break/lunch times	→	→	
Played tig at break/lunch in primary				
Skipping at break/lunch times				
Playing with balls at break/lunch times				
Started swimming lessons in pre-school	Sustained interest in swimming	→	→	Sustained interest in PA
Joined swimming club in P3				
Felt good doing PA in primary school	Positive feelings when doing PA	→	→	Positive sense of self when active
Liked the music at dancing	Enjoyment of music in dancing	Enjoyment	→	
Liked moving to the music at dancing				
Enjoyed playing football	Enjoyment of football			
Enjoyed running about at football				

Enjoyed running about in PE	Enjoyment of PE			
Enjoyed PE because get out of classroom				
Enjoys swimming	Enjoyment of swimming			
Likes swimming				
Friends involved in dancing	Peer involvement	Peer support	Social support	Supportive PA environment
Started doing football with friends				
Played games with friends at break/lunch in primary				
Availability of skipping ropes at break/lunch in primary	Availability of equipment at break/lunch times	Provision of opportunity for PA in school	→	
Availability of balls at break/lunch in primary				

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Stopped football because too busy to make football training at secondary school	→	→	Lack of time
Stand talking with friends at break/lunch in secondary school	Lack of activity at break/lunch times	→	Lack of utilising opportunities to be active
Goes out with friends at weekends	Alternative activities at weekends	→	Alternative activities to being active

**** indicates meaning unit label categorisation into two different themes**

Table D.12: Summary of ordered themes for Gemma

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Taste of lots of different sports at athletics club	Activities out of school	→	Utilised opportunities to be active
Hockey on Sundays at primary school			
Club hockey training on Sunday			
Football matches on Saturday			
Running once a week with a club			
Throwing at athletics club			
Lots of football with primary school	Activities at primary school	→	
Preferred primary because got to run about			
Football in P7			
Running in P7			
Joined in with football at break/lunch in primary	Activities at break/lunch times	→	
Active games at break/lunch in primary			
Mostly played football if allowed at break/lunch in primary			
Did a bit of everything in PE	Activities in PE	→	
Gymnastics in PE			
Mix of everything in school sports PE			
Friend's older sister played football at break/lunch times	Peer involvement	Social support	Supportive PA environment
Friend started playing football at break/lunch in primary			
Her and friend only girls playing football at break/lunch times			

Boys used to play football at break/lunch			
Lots of people from local area went to athletics club			
Joined football club with friend	Peer support		
Had coaches at athletics club	Leader support		
Liked running about in football	Enjoyment of extra-curricular PA	Enjoyment	Positive sense of self when active
Enjoyed sprinting			
Enjoyed the long jump			
Enjoyed hockey in primary school			
Focused on activities she likes at athletics club			
Enjoyed being able to go outside in PE	Enjoyment of PE		
Enjoyed not being in the classroom in PE			
Enjoyed being able to run about in PE			
Enjoyed doing different sports in PE			
Learnt lots of different sports at athletics club	Opportunity for developing competence		
Fastest at running in her class so decided to keep that up and join the club	Competent at running	Competence	
Focused on own sport even for inter-scholastics competition	Participate in competition in own event		
Didn't bother how she felt doing PA	Comfortable with self when active	→	

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Doesn't play football anymore	Lack of PA in secondary school	→	Lack of utilising opportunities to be active
Sit about at break/lunch time in	Lack of activity at break/lunch times	→	

secondary			
Homework in secondary school	→	→	Alternative priorities
How she feels doing PA bothers her more now	Self-presentational concerns	→	Negative sense of self when active
Not too keen on doing swimming with boys**			
Would feel more confident if lost weight	Body concerns	→	
Not too keen on doing swimming with boys**	Uncomfortable swimming with boys	Uncomfortable in PA environment with boys	Unsupportive PA environment
Would prefer all-girls swimming	Prefer all-girls PA environment		
No friends go to running club	Lack of peer support	Lack of social support	
Boys don't play football at break/lunch in secondary	Playing games at break/lunch not part of school culture	Being active at break/lunch not part of school culture	
No-one runs about at break/lunch at secondary			
More people sit and talk at break/lunch in secondary			

** indicates meaning unit label categorisation into two different themes

Table D.13: Summary of ordered themes for Rebecca

POSITIVE ASPECTS OF PA EXPERIENCE (PAST)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Active games at break/lunch	Activities at break/lunch	→	Utilised opportunities to be active
Swimming on Sundays	Activities out of school	→	
Dancing in P7			
Activities in PE dependent on what upcoming events	Activities in PE	→	
Running in fields in PE			
Skipping in PE			
Cross-country in PE			
Lots of races in PE			
Running and jumping over pole in PE			
Gymnastics in PE			
Interscholastic competition at Meadowbank in primary	School competitions	→	
PE in primary school wasn't strict	Positive environment in PE	Supportive PE environment	Supportive PA environment
Whole class involved in games at break/lunch	Peer involvement	Social support	
Swimming with dad and sister	Family involvement		
Mum encouraged her to keep going to dance classes	Family support		
Running in fields if weather good	Good weather influencing PA	Physical environment facilitators	
Didn't really think about how she felt doing PA	Comfortable with self when active	→	Positive sense of self when active
Really enjoyed PE	Enjoyment of PE	Enjoyment	
Enjoyed doing stuff she liked in PE			
Liked running	Enjoyment of running		
Liked chatting to friends whilst running in PE	Enjoyment of being with friends in PE		
Felt free and relaxed in PE	Positive feelings when active	→	

Started dancing when young	Sustained interest in dancing	→	Sustained interest in PA
Started dancing when three			

NEGATIVE ASPECTS OF PA EXPERIENCE (PRESENT)			
Meaning unit labels	First-order themes	Second-order themes	Overall themes
Sit and chat at break/lunch in secondary	Lack of activity at break/lunch times	→	Lack of utilising opportunities to be active

**** indicates meaning unit label categorisation into two different themes**