An Investigation into the Nature of Physical Activity in Young People within a Scottish Context

Steven David Young

A thesis submitted in partial fulfilment of the requirements of Edinburgh Napier University, for the award of Doctor of Philosophy

February 2018

Abstract

Researchers have linked physical activity (PA) with positive health outcomes. Unfortunately, PA in young people continues to be reported as a concern with many not achieving the recommended guidelines. Further, participation in childhood and adolescence is positively associated with PA into adulthood, highlighting the importance of PA habits in young people for lifelong participation. Gender, socio-economic status (SES), and motivation have all been shown to be important factors that influence participation, and as such are a focus of this thesis.

Mixed methods research was adopted to 'investigate the nature of PA in young people within a Scottish context' including quantitative (study one) and qualitative (studies two and three) methodologies. The initial motivation for study one emerged through my personal interest in understanding the nature of young people's participation in structured club activities and the role SES, gender and motivation play in a Scottish context. Sport is often used as a proxy for PA and as such, young people's participation is frequently reported on sports club based activities. On reflection, this focus on 'weekly club activity sessions,' rather than a more broad, valid, and reliable measure of PA, limited the application of the findings. Nevertheless, the findings and reflection on the methods used in study one informed the direction of the thesis moving forward. More specifically, SES was found to be the strongest predictor of club activity participation, with those from higher SES taking part in more club activity sessions than those from lower SES. No significant gender differences in participation were found. While SES was the sole predictor of school club activities, perceived competence and intrinsic motivation were also important predictors of participation in out-of-school club activities. The regression models predicted between 5% and 27% of the variance in club participation, highlighting the multi-factorial nature of the influencers of participation.

In order to understand the nature of PA more broadly in young people from lower SES within a Scottish context and to investigate the complexity of participation influencers, a qualitative methodology was used. Study two investigated low SES Scottish youths' PA experiences across key development stages (i.e., childhood, adolescence and newly identified early adulthood, study two). Results suggested that young people from low SES participate in a high variety of unstructured PA throughout their lives, which is underreported in the literature. Participation in structured sport

based activities in childhood, particularly those in which a young person forms a sport 'identity,' influences future adherence, but also engagement and enjoyment of school physical education (PE). For many young people, particularly those from less affluent backgrounds, school PE may be the only opportunity for them to participate in structured PA. While some young people embraced school PE, others perceived PE as threatening, so leading them to avoid or drop out altogether. Findings showed that in addition to previous experience, the nature of the PE climate also influenced participation as young people entered early adulthood.

As well as shedding light on the broad nature of young people's PA from low SES backgrounds, the findings from study two highlighted the role that schools (e.g., through PE) have in influencing young people's PA and associated attitudes. Study three aimed to investigate young people's PA, motivational influences, and the role of schools from the perspective of qualified Scottish PE teachers, knowledgeable on policy issues and active in the development of future teachers. The main findings from study three showed that family influences (mostly parents) and SES were key towards the formation of young people's attitudes and behaviours towards PA, particularly in sports. Those young people with parents not showing any interest in PA were more likely to be inactive compared to those youngsters with active parents. Young people from lower SES backgrounds were less likely to participate in sports activities, thus preventing them from gaining the necessary experiences (and competencies) needed to successfully take part in many school PE activities. Also, this study found that secondary school PE is perceived by many pupils as threatening which subsequently led many to avoid PE altogether. Many young people are not achieving the curriculum expected health and well-being benefits through school PE. The results also highlighted the huge challenge and role conflict that is apparent for PE teachers in schools, which is a barrier to effective promotion of PA and positive attitudes in a range of young people.

This thesis supports the contention that SES is an important factor in young people's PA. While those from lower SES were shown to participate in less structured sport club activity than those from higher SES, evidence emerged suggesting that young people from lower SES participate in a variety of unstructured PA which is underreported in the literature. The complexities of PA participation were also apparent where previous experience, parents and school PE were found to have important roles, which either facilitated or debilitated motivation, and participation. This thesis also

highlighted that there are serious challenges in delivering an effective PE experience to pupils with a wide range of ability and backgrounds. These challenges were exacerbated by the vagueness of policy guidance (e.g., within Scotland's curriculum for excellence), the pressures of certification, and the mostly sport dominated culture of PE. Implications for policy and practice in relation to the motivational climate of PE emerged. Recommendations for future research and practice in this area are discussed.

Author Declaration

Edinburgh 2018

I hereby declare that:
I have composed this thesis
This thesis is my own work
This work has not been submitted for any other degree or professional qualification except as specified

Steven Young

Acknowledgements

My sincerest thanks are extended to:

Firstly, all those individuals who gave their consent to participate in the studies and all the others who offered their support.

To my supervisors Dr. Russell Martindale and Dr. Mandy Winterton for their support, guidance and friendly advice across the eight years it took to complete this thesis. Russ, there were some particularly challenging moments. I owe you a huge dept of gratitude for believing in me and keeping me on track during some of the more onerous times. We got there in the end. Big thank you matey! Mandy, thank you for all the advice qualitative including guiding me through some of the trickier ethical and study design moments.

Dr. Simon Coleman, for providing not only advice and guidance on statistics, but also, for listening to my ongoing frustrations. Also, thank you for being my weight training partner, where I was able to not only vent my frustrations, but also managed to keep in good shape, 'to boot'.

Professor John Sproule for guidance on all things physical education as well as offering much valued support and advice towards completing the final stages of my work. Thank you John. Coffee on me next time. Also, to Graham Baker for giving up some of his valuable time to help guide me in the ways all things physical activity and health. Thank you Graham.

To my family more than most who have had to endure my continued and sometimes very selfish moments over the past eight years. Ben, you were my main inspiration in starting out on this journey in the first instance. Thank you for just being you. Thank you too mum.

Finally, Elspeth, you listened to my many rants over the final stages of this PhD, which, was without doubt, a very challenging period. I truly thank you for being part of my life.

Contents

List of figures

List of tables

CHAPTER ONE – Introduction

Participation in some form of physical activity (PA) is important throughout a person's life which will enhance their health and well-being (British Heart Foundation, BHF, 2012), and if properly administered can be effective in the prevention of a range of serious health problems such as overweight and obesity, type 2 diabetes, cardiovascular disease, and mental illness (Astrup, 2001; Bassuk, & Manson, 2005). For children and adolescence, systematic reviews have shown that daily PA particularly moderate to vigorous physical activity (MVPA), is important for their current and future health (Janssen, Leblanc, & Allana, 2010).

Nevertheless, governments and other health related agencies consistently report that children and adolescents are not participating in sufficient amounts of PA to benefit their health and well-being (Patton 2011; Scottish Government, 2015). These reports are echoed globally (Tremblay et al., 2014). For example, a study conducted in the United States of America (USA) by Eaton et al. (2007) suggested that most young people were not achieving the recommended levels of PA to gain health benefits (i.e., doing any PA that increased their heart rate and made them breath hard some of the time for at least 60-minutes on five or more days during a seven-day period). Also, the Canadian Community Health Survey (Gravel & Béland, 2005) reported that 27% of young people aged 12-17 were physically inactive. Inactivity in young people would appear to be strongly associated with socioeconomic status (SES). Studies have shown that young people from deprived backgrounds are more likely to be inactive than those from more affluent backgrounds (Drenowatz et al., 2010; Pedersen 2010, & Biddle, 2011).

Long periods of inactivity particularly in childhood and adolescence, can have long lasting negative consequences on a young person's health and well-being (Patton et al., 2011). Stamatakis, Wardle, and Cole, (2009) found that young people from deprived backgrounds are more likely to be overweight or obese than those from more affluent backgrounds. Subsequently, these associated health and well-being problems are more likely to continue into adulthood (Biddle, Gorley, & Stensel, 2004). The British Medical Association (BMA, 2010) advised governments that inactivity is directly linked to negative health outcomes reporting significant increases in cases of Type 2 diabetes over the last decade. Perhaps the more important concern to consider is the impact that a lack of physical inactivity can have on rates of human mortality. The

World Health Organization (WHO, 2016) suggest that insufficient PA is the fourth leading risk factor for global mortality and as such report that:

- Insufficient physical activity is 1 of the 10 leading risk factors for death worldwide.
- Insufficient physical activity is a key risk factor for Non-Communicable Diseases (NCD) such as cardiovascular disease, cancer and diabetes.
- Physical activity has significant health benefits and contributes to prevent NCD.
- Globally, 1 in 4 adults are not active enough.
- More than 80% of the world's adolescent population is insufficiently physically active.

The BMA (2010, p. 3) reported that Doctors had concerns for children's health in Scotland, and stated that 'one-in-five children is overweight, and that one-in-ten of those children is obese or severely obese.' The report predicted that if current trends were to continue, childhood obesity would lead to an increase in cases of heart disease, osteoarthritis, diabetes, some cancers, poor mental wellbeing, and that the estimated economic consequences to Scottish society would be in the region of £457 million per annum. In addressing this problem, governments and policy makers have promoted various intervention strategies although the effectiveness of these has shown to be limited (Sims, Scarborough, & Foster, 2015).

In Scotland, initiatives included increased support through the National Review of Physical Education (Scottish Executive, 2004), the introduction of the Active Schools Programme (Sportscotland, 2003) and the inclusion of PA as part of the Health Promoting Schools Unit (Learning and Teaching Scotland, 2009). And yet, subsequent studies have shown that rates of PA participation have not improved (Currie, 2011; Tremblay et al., 2014), and in some instances, have declined (Currie, 2015). For example, the Scottish Health Survey (SHS, 2009) reported declines of 6% between 1998 and 2009. Currie et al. (2003; 2007; 2011; 2015) reported on children's rates of participation between 2003 and 2015 and although their results have shown increases of 4% between 2003 and 2007 (19% up to 23%), the rates are less in 2011 and 2015 compared to what they were in 2003 (15% and 18% respectively). A possible explanation for the limited effectiveness of these existing interventions is that they have not adequately targeted the most important determinants of PA. Sallis and Owen (1999, p. 133) summarised the most important modifiable determinants for young people as self-efficacy, enjoyment, time spent outdoors, and social support from family and

friends.

Understanding PA in young people is essential (Tremblay et al., 2014). Therefore, it is important to understand the underlying reasons why and how young people choose to participate in the first place, continue to participate, and in some instances, choose to disengage from PA altogether (Farooq et al., 2017). While there are many factors that influence PA in young people, Ng et al. (2012) suggest that a strong evidence base exists for the importance of intrinsic motivation on PA promotion. Furthermore, Plotnikoff, Costigan, Karunamuni, and Lubans (2013) highlighted that understanding the social cognitive factors (e.g., motivation) which are influenced by other environmental factors (e.g., social support, peers, parents), is central.

Existing theories suggest that motivation plays a vital role, and that people are highly motivated if they have a high sense of freewill and fulfilment (Deci & Ryan, 1985; Harter, 1978). For example, self-determination theory (SDT) proposes that individuals will only continue to participate in an activity so long as the feel intrinsically motivated to do so. Otherwise, they will very likely disengage or avoid participating in activity altogether (Ryan & Deci, 2002). However, it should be noted that although intrinsic motivation has been shown to play a vital role towards longer term participation, extrinsic factors such as for perceived fitness and health outcomes are particularly important for initial activity engagement (Teixeira, Carraca, Markland, Silva, Ryan, 2012). SDT identifies three basic psychological needs as essential towards intrinsic motivation (i.e., competence, autonomy and relatedness) and maintain that if any of these needs are thwarted, then intrinsic motivated behaviours to participate are reduced (Deci, & Ryan, 1985).

Having a better understanding of motivation is vital towards young people's participation in PA specifically towards improving the context, or the environments in which they participate (e.g., in-school and out-of-school domains). Subsequently, these improvements will likely contribute towards increased participation by young people and therefore help them to achieve the recommended PA guidelines. More importantly, increased participation means that young people will lead healthier lifestyles which will likely continue into their adult years.

Against this backdrop of evidence, the purpose of this thesis is to 'investigate the nature of PA in young people in a Scottish context.' As such, this will contribute to existing research, which, will in turn provide practitioners, researchers and policy makers with additional knowledge through them having a broader and in-depth

understanding of what influences participation. This thesis adopted a mixed methods approach (one quantitative and two qualitative) to 'investigate the nature of PA in young people in a Scottish context' from mixed socio-economic status (SES) backgrounds. The aims of the thesis are as follows:

Aims:

1. To investigate young people's participation in PA (structured and unstructured) and associated motivations.
2. To investigate the nature of young people's PA participation experiences (structured and unstructured) and associated motivational influences, through the perceptions of PE professionals.

These aims will be achieved by conducting the following studies:

Studies:

1. To investigate using quantitative research, the frequency of weekly club activity sessions and motivational factors in a sample of 133 young people from high and low SES backgrounds within a Scottish context.
2. To investigate using qualitative research, the PA experiences across the childhood and adolescent development stages of 18 Scottish youths from a low SES catchment (all of whom volunteered to participate in a secondary school PE and recreational programme).
3. To investigate using qualitative research, the nature of PA in young people and associated motivational influences within a Scottish context, from the perspective of six qualified Scottish PE teachers, knowledgeable on policy issues and active in the development of future teachers.

These aims are to be investigated through a literature review and three empirical studies. To begin with, a review of literature will be carried out pertaining to the following six key areas:

1. Why Physical Activity is Important in Young People?
2. Physical Activity Levels in Young People and the Concerns This Raises;
3. The Measurement of Physical Activity in Young People;

4. The Importance of Understanding the Influences (Correlates) on Young People's Participation in Physical Activity;

5. Wat are the Correlates of Physical Activity in Young People?

6. Using the Self-Determination Theory Framework to Help Further Understand Physical Activity in Young People.

From the literature review, a quantitative inquiry (study one) will use self-report questionnaires to examine the frequency of weekly club activity sessions and key motivational factors (intrinsic motivation, IM; perceived competence, PC; and self-determination; SD) in 133 young people in Scotland (male = 64 and female = 69, aged 11 - 14) across mixed SES background (lower SES = 54 and higher SES = 79).

Given the emerging need to develop a greater understanding of the complexities of participation particularly in lower SES (study one), two qualitative studies will examine, in more depth (through semi-structured interviewing), the nature of PA more broadly in young people across the childhood and adolescent stages of development. The rationale for exploring the nature and types of PA using qualitative methods is born out of the fact that quantitative research does not capture the complexity of PA choices, and the associated multi-factorial influences. Koorts et al. (2011) recommended that all aspects of young people's PA should be examined, and reviews by Sterdt et al., (2014) and Tremblay et al., (2014) highlight a need to explore this in lower SES populations.

The first qualitative study (study two) will comprise of 18 secondary school pupils (males = 9 and females = 9, aged 16 - 17) enrolled onto a Scottish curriculum school physical education (PE) and recreational programme. Given the clear need to understand more about those from lower SES backgrounds (see chapters two, pp. 40-41; and three, pp. 69-71), this study will target youths from this background. Although this group are engaged in a school PE programme, the nature of the programme was less about sport and more about pupil engagement in PA. Some of the participants are not sport orientated and had dropped out from participating in PE at some point in secondary school (between S1 and S4). Recruiting completely inactive (sedentary) participants is too great a challenge because of the inherent difficulties, specifically relating to them being sedentary. In other words, sedentary individuals are amotivated, therefore, very difficult to recruit for a study related to PA (Smith & Biddle, 2008).

The second qualitative study will comprise of six qualified PE teachers (males = 3 and females = 3, aged 27 to 60) employed as university teaching fellows (n = 4) and lecturers/researchers (n = 2). All the participants have a broad range of experiences

including teaching in Scottish primary and secondary schools, coaching with young people in the community and in Scottish curriculum policy. This study provides a more holistic overview and perspective of the issues surrounding PA uptake and promotion within a youth context, by tapping into experienced practitioners in the field.

CHAPTER TWO - Literature Review

INTRODUCTION

In 2004, the UK Government Chief Medical Officers (CMO) state that 'there are few public health initiatives that have greater potential for improving health and well-being than increasing the activity levels of the population' (Department of Health [DoH], 2004, p. 7). More recently, a report on physical activity (PA) for health from the four home countries (CMOs for England, Wales, Scotland, and Northern Ireland) stated that 'inactivity is a killer' (Department of Health, Physical Activity, Health Improvements and Protection [DHSSPS] 2011, p. 3).

Participating in PA contributes to general health and wellbeing (British Heart Foundation [BHF], 2012). Therefore, by engaging in some form of PA whether in individual or team-based sports, structured exercise such as class-based circuit training and aerobics, or less structured activities such as walking, running or gardening, can lead to positive health-related outcomes (Biddle & Mutrie, 2008).

Some of these health-related outcomes have been found to include reduced levels of obesity (Hill, 2004), lowering of blood pressure, and reduced risks from type 2 diabetes and chronic cardiovascular disease (Bassuk & Manson, 2005). Regular participation in PA has been found to improve cardiovascular fitness (Rowland, 2001), bone density, muscle tone, and balance (Young, Weeks, & Beck, 2007). Other studies have shown that regular bouts of PA can provide psychological benefits such as improved emotional wellbeing (Steptoe & Butler 1996) and reduced levels of anxiety, depression and stress (Salmon, 2001). Indeed, the DoE (2004) suggest that there is a dose-response relationship between PA and health, whereby higher participation lowers the risk of health-related problems (Figure 2.1).

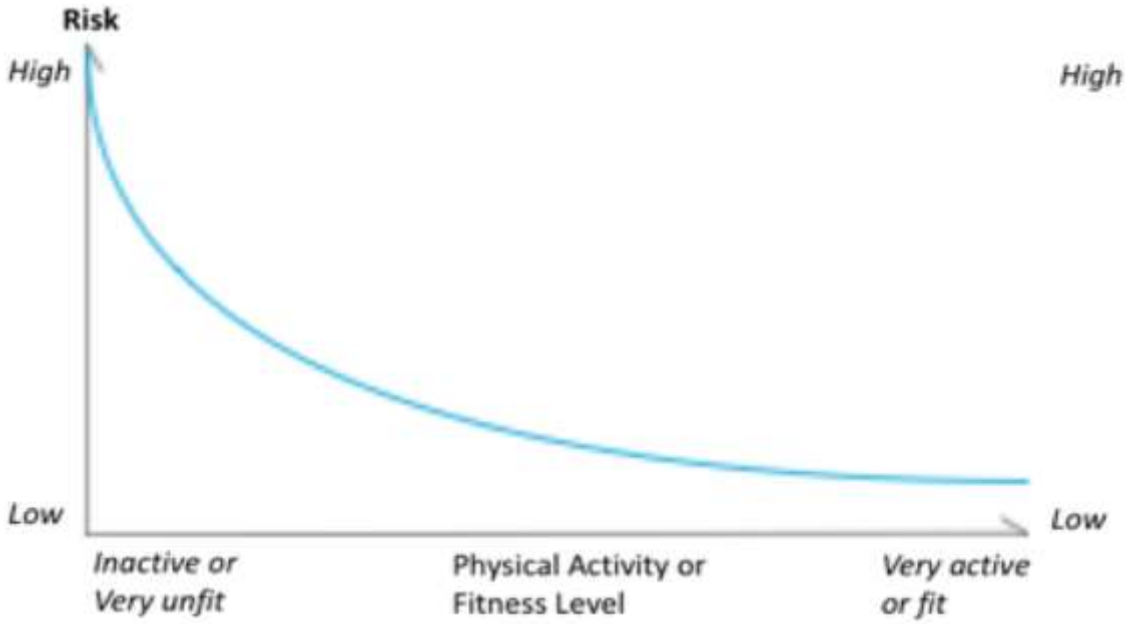


Figure 2.1 Dose-Response Curve. Physical activity and its relationship with health and well-being. Adapted from 'at least a five week: evidence on the impact of physical activity and its relationship to health. A report from Chief Medical Officer,' by Department of Health (2004)

The levels of PA in young people is a growing concern with participation rates continuing to drop (BHF, 2015). This decline in PA is often associated with negative lifestyle outcomes contributing towards young people becoming more overweight, obese, and having increased incidences of chronic diseases such as type 2 diabetes (Hughes et al., 2011). Poor lifestyle in childhood and adolescence has been shown to place young people at even higher risk of disease in adulthood (Patton et al., 2011). The epidemiological evidence suggests that strategies (e.g., PA intervention) aimed at improving lifestyle in childhood and adolescence contributes towards the prevention of poor health in later life (Patton et al., 2011). This has the potential to reduce personal, and societal costs through the prevention of negatively associated health and well-being outcomes (CMO, 2011). The evidence seems to indicate that PA in childhood and adolescence is important for a variety of reasons particularly in helping to prevent health related conditions during the later years (Luguna et al., 2013). Therefore, the purpose of this chapter is to introduce and explore through existing literature, PA in young people. By doing this, it is hoped to build a more comprehensive understanding of the 'nature of PA in young people' providing some insight as to why some young people are more active than others. Specifically, this chapter aims to explore the following six key areas:

1. Why PA is important in young people?
2. PA levels in young people and the concerns this raises;
3. The measurement of PA in young people;
4. The importance of understanding the influences (correlates) on young people's participation in PA;
5. What are the correlates of PA in young people?
6. Using the self-determination theory framework to help further understand PA in young people.

Why is PA Important in Young People?

There is growing evidence to suggest that PA is important in young people and that taking part in some form of activity benefits their general health (Hughes et al., 2011; Patton 2011). Janssen, LeBlanc, and Allana (2010) confirmed this through their systematic review of the literature looking at the health benefits of PA in young people. Their findings suggested that the more PA children and adolescence take part in, the greater the general health benefits. Other than the physical health benefits, other studies have shown that PA in childhood and adolescence is positively associated with better educational standards and socioeconomic position in adulthood (Koivusilta, Nupponen, & Rimpela, 2011). This research is important as it has shown that young people's general health can be improved through participation in PA. General health is often based on the evidence from five outcomes. Specifically, overweight and obesity; type 2 diabetes; cardiovascular health; skeletal\muscular health; and psychosocial health (Biddle, Gorley, & Stensil, 2004). This section explores these outcomes through the effects that PA has on health in childhood and adolescence and how PA during this period may influence health in adulthood.

Overweight and Obesity

The incidence of overweight and obesity in young people is a concern throughout Europe (Livingstone, 2001; BHF, 2015) and the rest of the world (Ng et al., 2014). Previous studies have estimated that there were 43 million pre-school children around the world considered to be overweight or obese and that a further 92 million were at risk of being overweight or obese (deOnis, Blossner, & Borghi, 2010). More recently,

Ogden, Carroll, Kit, & Flegal (2014) suggested that although initiatives (e.g., nutrition programmes) aimed at reducing these trends have shown some decreases in overweight and obesity in youth populations, they concluded that levels of obesity remained high. The prevalence of overweight and obesity in children in the developing countries is showing no signs of improvement, and that the numbers of cases are on the increase. For example, Ng et al. (2014) conducted a systematic analysis of the global burden of disease from which they provided an estimate for the occurrences of overweight and obesity in children and adolescents in developed countries. From 1980-2013 they reported obesity increases for boys from 16.9% to 23.8% and girls from 16.2% to 22.6%.

However, this finding by Ng et al. (2014) contradicts earlier studies in France suggesting that the prevalence of overweight and obesity in young people has stabilised and in some instances, reversed (Lioret et al., 2009; Péneau et al., 2009). This was also reported by Stamatakis, Wardle, and Cole (2009) in their study involving English boys (aged 5 – 10). But, they suggested that these improvements were found in boys from higher socio-economic status (SES) backgrounds only and that those from lower SES were not showing the same gains, and in fact were becoming more overweight and obese.

Nevertheless, it seems that any reports of overweight and obesity in young people is a concern, particularly when linked to harmful health conditions such as cardiovascular disease (CVD) and type 2 diabetes (Pulgaron & Delamater, 2014). Furthermore, overweight and obesity in childhood and adolescence have been found to be a strong predictor of overweight and obesity in adulthood along with the associated health problems (Biro & Wien, 2010; Viega et al., 2009). Patton et al. (2011) demonstrated individuals persistently overweight throughout adolescence were less likely to recover to a healthy weight (in adulthood), whereas, those with less persistent weight problems during adolescence were less likely to suffer problems with obesity in adulthood.

Evidence suggests that PA is important in the prevention of overweight and obesity in childhood and adolescence (CMOs, 2011; Doak, Visscher, Renders, & Seidell, 2006), and in the prevention of obesity and the associated health-related conditions in adulthood (Brown, Kelly, & Summerbell, 2006). Brown, Kelly, and Summerbell (2006) carried out a review of interventions including the effects of PA on obesity in adults and children. Their findings suggest that by participating in sufficient

levels of PA will decrease the risk of overweight and obesity. However, it should be noted that PA is only one component used in interventions for addressing overweight and obesity in young people.

Countries including Australia (National Health and Medical Research Council [NHMRC], 2003), the UK (National Institute for Health and Clinical Excellence [NICE], 2013), and Canada (Lau, 2007) have provided clinical guidelines that recommend that the implementation of multicomponent intervention strategies will help in the prevention and treatment of childhood overweight, and obesity. These guidelines include: 1) reduced energy intake, 2) increased PA; ≥ 60-minutes of daily moderate to vigorous intensity, 3) decreased sedentary behaviours, and 4) behaviour change techniques. A Cochrane review demonstrated that intervention strategies aimed at altering sedentary behaviour, PA, and eating habits in young people resulted in clinically meaningful weight reduction (Oude Luttikhuis et al., 2009). A fundamental limitation with PA intervention studies is that because they only describe the content of the intervention, there is usually no information about what other PA participants take part in out with the study (Andersen, Riddoch, Kriemler, & Hills, 2011).

Other research demonstrates that overweight and obesity in childhood and adolescence is multi-factorial (Glass & McAtee, 2006; Pulgaron & Delamater, 2014), with many factors being out of the control of young people such as which school they go to or their home environment (Shannon, 2014). Through considering the socio-ecological approach, these multiple factors impacting young people's PA are explored later in this chapter.

Type 2 Diabetes

Type 2 diabetes (T2D) is a serious health-related outcome that is closely associated with overweight and obesity. More concerning is the growing prevalence of overweight and obese young people already diagnosed with T2D, or that the condition will develop in adulthood (Biro & Wien, 2010).

Several decades ago, T2D was thought to be a condition that only occurred in adulthood, however, since the turn of the millennium it has been reported in young people (Sinha et al., 2002). Since then, the incidence of T2D has risen noticeably as a serious health concern (Pinhas-Hamiel, & Zeitler, 2007), and overweight and obesity is prominent in most youngsters diagnosed with T2D (Pulgaron & Delamater, 2014). Pulgaron and Delamater (2014) also indicated that obesity and T2D together are

associated with the increased risk of numerous health disorders including increased risk of depression, eating disorders, and a reduced quality of life.

Farsani, van der Aa, van der Vorst, Knibbe, and du Boer (2013) suggested that many of the previous cases of children diagnosed with T2D may well have been underestimated. They conducted a review and evaluation of the methodological approaches in the incidences of T2D in young people. Their findings suggest that young people with T2D remain undiagnosed for a long time leading to the underestimations in cases of T2D. Farsani et al. (2013) concluded that the cause of underestimations in cases of T2D are related to study methodologies and differences in population characteristics.

Obesity and T2D is a growing global concern in young people which will continue unless properly structured methodological approaches (for accuracy of reporting) and interventions are effectively developed. Compared to other health risks such as obesity, T2D is associated with greater health risks, therefore, those already diagnosed with the condition need to continuously manage T2D for the remainder of their lives (Pulgaron & Delamater, 2014). Similar to overweight and obesity health conditions in young people, the evidence supports PA as an important intervention strategy in the treatment and prevention of T2D during childhood and adolescence, and the associated health-related conditions during adulthood (Biro & Wien, 2010; Pulgaron & Delamater, 2014).

Umpierre et al. (2011) conducted a systematic review and meta-analysis of randomised control clinical trials looking at structured exercise (aerobic, resistance, or both) and its association with hemoglobin A1c (HbA1c) in T2D in adult patients. HbA1c is a form of haemoglobin that is bound to glucose, which is routinely tested in people with T2D. The measurement of HbA1c is used to assess how effective a treatment plan such as PA is for someone with T2D (high levels of HbA1c indicates poor control of diabetes). Umpierre and colleagues concluded that 150-minutes per week of structured PA is linked to improved glycaemic control in people with T2D. Other studies support these findings, although have highlight that outside of the laboratory many young people with T2D are not achieving the recommended levels of PA to attain positive outcomes in managing the condition (Liese, Ma, Maahs, & Trilk, 2013).

Cardiovascular Health

Overweight and obesity can lead to serious health related conditions such as T2D. However, T2D is not an isolated condition associated with overweight and obesity. CVD is a global public health concern (Lloyd-Jones et al., 2010) for older populations' particularly in middle age and beyond, and is the leading cause of morbidity (Reeve, Duffy, O'Brien, & Samali, 2005). There is growing evidence to suggest that the development of CVD begins during childhood and can continue into adulthood (Ried-Larsen, Grøntved, Kristensen, Froberg, and Anderson, 2013). Therefore, it is reasonable to assume that by preventing the onset of CVD in childhood and adolescence will reduce the risks of the condition escalating into adulthood.

There is accumulating evidence that PA can contribute towards reducing the risk factors of CVD in young people. For example, a review conducted by Andersen et al. (2011) discussed the results of the literature from 2006 to 2011, concluding that PA has beneficial effects on the risk factors associated with CVD in children. Andersen et al (2011) also showed that changes in protocol and guidelines over the years have benefited intervention programmes, by combining resistance exercise and aerobic fitness PA. More recently, a meta-analysis of randomised trials conducted by Cesa et al. (2014) demonstrated that PA intervention programmes designed for young people (aged 6-12) reduced the risk factors associated with CVD. Specifically, Cesa et al. (2014) found that PA exercise intervention programmes (longer than six months) reduced blood pressure levels and triglycerides.

The evidence appears to indicate that the frequency and intensity of PA are important factors (Andersen et al., 2011). This was demonstrated by Ekelund et al. (2012) in their review of 14 studies between 1998 and 2009 comprising of 20871 young people. Their findings suggest that young people accumulating high levels of moderate to vigorous physical activity (MVPA) were less likely to suffer from the onset of CVD compared to those less active or sedentary (PA levels were measured using accelerometer during one day from 7am to midnight; MVPA as minutes = ≥ 3000 counts/min; sedentary as minutes = ≤ 500 counts/min). Ekeland et al. (2012) concluded that these findings were regardless of the time young people were sedentary, and suggested that it was more important for young people to focus on increasing their levels of MVPA rather than decreasing their time being sedentary.

More recently, Ried-Larsen, Grøntved, Kristensen, Froberg, and Anderson (2013) investigated PA and CVD in young people, reporting that an increase in MVPA

from adolescence to adulthood was linked with lower levels of metabolic CVD risk in adulthood. An explanation for these benefits of PA on CVD is reported in a study by Lee et al. (2011). They found that PA modifies the mitochondrial phenotype which contributes to cardio-protection.

Skeletal and Muscular Health

In the UK, osteoporosis is reported to affect one in two women and one in five men over the age of 50 (National Osteoporosis Society Online, 2016). In the US, Burge, Dawson-Hughes, Solomon, Wong, King, and Tosteson (2007) suggested that the number of fractures (predominantly resulting from osteoporosis) would increase by 50% in men and women between 2005 and 2025. Sugerman (2014) reported that osteoporosis continues to be a serious condition, particularly for post-menopausal women stating that half of post-menopausal women over the age of 50 would suffer from a hip fracture due to osteoporosis. Other than the emotional issues, people experiencing osteoporosis, and the attributable subsequent fractures, is of a growing economic burden for many societies particularly when concerning the long-term care of those suffering from the condition (Hopkins et al., 2016).

Although osteoporosis is normally associated with ageing, the evidence continues to suggest that by participating in weight bearing activities (e.g., walking, running, jumping, and weightlifting) in childhood and adolescence will maximise bone development (Baxter-Jones, Faulkner, Forwood, Mirwald, & Bailey, 2011; Behringer, Gruetzner, McCourt, & Mester, 2014). The benefit of PA on bone development in young people was investigated in a recent systematic review of the literature by Tan et al. (2014). They found that from a total of 37 studies, 26 reported PA as having a positive association with bone strength in the developing skeleton in childhood and adolescence for both boys and girls.

Therefore, to reduce the onset of osteoporosis and subsequent risk fractures in later life, strategies designed to improve bone health should be adopted during the early years (Tveit, Rosengren, Nilsson, Ahlborg, & Karlsson, 2013). Tveit and colleagues showed this from their study investigating bone mineral density (BMD) changes in 46 male athletes (including eight swimmers, 20 runners, 12 footballers, and six weightlifters). BMD measurements were recorded in participants when they were performing athletes (aged 15 to 40), follow-up measurements were recorded during long-term retirement (aged 38 to 40) (control groups consisted of 24 non-athletic males

of a similar age). Tveit et al. (2013) demonstrated that exercise-associated benefits acquired through sports performance in young adulthood continue into later years even though levels of PA have declined. Tveit and colleagues do however acknowledge their study limitations which included, for example, low-power (through the small sample) and heterogeneous athletes including sports with low-ground reaction forces.

Regarding the type, duration, and intensity of activity most of the research suggests that short burst, short duration, and high-intensity PA provides the most effective bone development outcomes. Janssen, LeBlanc, and Allana (2010) demonstrated this in their systematic review of the literature suggesting that 10-minutes of moderate-high-impact activities on two to three days per week is positively associated with bone mineral density. However, they concluded that for additional health benefits young people aged 5-17 should participate in at least 60-minutes of daily PA some of which should be vigorous. More recently, Tan et al. (2014) found that the types of activities are important and that weight bearing activities such as in gymnastics, skipping, and jumping were the most effective exercises in bone development.

Psychosocial Outcomes

Besides the general health benefits, regular participation in some form of PA has been shown to lead to numerous and improved psychosocial outcomes in young people (Mutrie & Parfitt, 1998; Shepard, 1997). This was demonstrated by Singh, Uijtdewilligen, Twisk, van Mechelen, and Chinapaw (2012) in an academic context. They carried out a systematic review of the literature to explore the relationships between young people's PA and their school academic performances. Their findings linked positive academic performance outcomes with regular participation in PA. Indeed, Strong et al. (2005) found that young people participating in 60-minutes of daily MVPA had improved cognitive function, in particular increases in memory function and concentration were observed. Other studies have found that by participating in less PA can have similar effects. For example, a meta-analysis carried out by Fedewa and Ahn (2011) found that participation in PA three times per week can have positive effects on children's cognitive and academic achievement performances. It was concluded that 60-90-minutes of daily PA is necessary to maximise benefits. This meta-analysis used 195 effect sizes extracted from 59 published and unpublished samples.

Seefeldt, Ewing, and Walk (1992) demonstrated that participation in organised sport and exercise contributed to positive development in learning physical skills, appreciation of fitness, a sense of belonging, and acquiring sports skills for leisure-based activities as well as benefiting general health and well-being. Other research has reported that children and adolescents participating in regular bouts of PA have sound psychological wellbeing. For example, Steptoe and Butler (1996) in their study looking at adolescents from England, Scotland, and Wales found a positive association between PA and emotional well-being. Mutrie and Parfitt (1998) found positive associations with PA on mental health specifically self-esteem, and that those participating in more PA are less predisposed to mental illness. More recently, Biddle and Asare (2011) conducted a review of reviews examining PA and mental health in young people. Their findings suggested that those young people engaging in PA were less likely to have mental health problems and may also have better cognitive functioning. However, they concluded that many of the research designs were frequently weak and that the effects were mainly small to moderate.

Some of the possible explanations for these improved outcomes include physiological and psychological mechanisms. For example, PA has been shown to lead to neurological changes such as neurotransmitter concentration and brain structure (Trudeau & Shephard, 2010). From a psychological perspective, for example, PA leads to higher self-esteem by facilitating young people's perceived sense of achievement (Shepard, 1996). While these studies seem to suggest that PA can have numerous positive psychosocial benefits in young people, what is unclear is the exact dosage (intensity, duration, and frequency) required to bring about these positive effects particularly in children's academic achievement and cognitive functioning (Fedewa & Ahn, 2011).

PA Levels in Young People and the Concerns This Raises

It is important to note that research suggests that PA does not need to be vigorous or formalised (e.g., sports or organised exercise) to achieve health benefits (Biddle & Mutrie, 2008). Janssen, LeBlanc, and Allana (2010) demonstrated that benefits in young people's health can be achieved from as little as 30-minutes of moderate PA per day. Moderate PA can be achieved through brisk walking, which can be incorporated into everyday events and tasks such as in school (e.g., take the stairs instead of the lift), transportation to and from school (e.g., walking instead of using the car), and play type

activities (e.g., tig, hide and seek at the local park, in the back garden, and in the local area).

However, when considering accumulated active travel (e.g., to and from school), a review conducted by Faulkner, Buliung, Flora, and Fusco (2009) demonstrated that there were no associations between active transportation in school-aged children (e.g., 15-minute walk to and from school) and healthier body weight. They concluded that although active travel contributes to overall children's PA, health benefits are not gained for journey times of 15-minutes or less.

Recommended PA Guidelines

Guidelines for youths' PA has evolved over the years and have been used in the UK since 1998 (DoH, 2011). Since 2005, these guidelines have been based on research by Strong et al. (2005). Strong and colleagues conducted an extensive literature review (850 articles) looking at the effects of PA on health and behavioural outcomes. This work resulted in PA recommendations for young people living in the UK. They recommended that 'school-age youngsters should participate in 60-minutes of daily MVPA that is enjoyable and developmentally appropriate' (p. 736). This recommendation is applied across the UK although regional variations do apply (e.g., in Scotland and Wales the guidelines recommend youngsters should participate in at least 60-minutes of moderate intensity PA on most days of the week. In England and Northern Ireland guidelines recommended that youngsters participate in 60-minutes each day of the week (Table 2.1).

Table 2.1 Current youth's physical activity guidelines in the UK (BHF, 2010, pp. 2-3) based on recommendations by Strong et al. (2005)

Country	Guidelines
England	A total of at least 60-mimutes of at least moderate intensity physical activity each day. This should include activities to improve bone health, muscle strength and flexibility at least twice a week.
Northern Ireland	A total of at least 60-minutes of at least moderate intensity physical activity each day.
Scotland	At least 60-minutes of moderate intensity physical activity on most days of the week.
Wales	60-minutes of moderate intensity physical activity on at least five days of the week.

These variations in guidelines, which also included variations in age ranges (e.g., England and Scotland, aged 2 to 15; Wales, aged 4 to 15; and Northern Ireland, aged 8 to 12 - Table 2.2), subsequently led to young people's reported participation to vary across the UK when reported as a percentage of children achieving the recommended guidelines. For example, the results from the 'previous activity guidelines' (Table 2.2) might suggest boys and girls from England and Northern Ireland (32% and 24%; 19% and 10% respectively) participate in less activity than boys and girls from Scotland and Wales (63% and 45%; 76% & 67% respectively) (DoH, 2011). More recently, the CMOs (2011) issued the following guidelines for children and young people (aged 5 to 18 years):

- All children and young people should engage in moderate to vigorous intensity physical activity for at least 60-minutes and up to several hours every day.
- Vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week.
- All children and young people should minimise the amount of time spent being sedentary (sitting) for extended periods. (DoH, 2011, p. 26).

Table 2.2 The percentage of children meeting previous physical activity guidelines (DoH, 2011, p. 13)

Country	Boys	Girls
England (aged 2 – 15)	32%	24%
Northern Ireland (aged 8 – 12)	19%	10%
Wales (aged 4 – 15)	63%	45%
Scotland (aged 2 – 15)	76%	67%

Note. England and Northern Ireland: based on the physical activity guideline for children of 60 minutes or more of moderate intensity each day. Wales and Scotland: based on the physical activity guideline for children of 60 minutes or more of moderate intensity on 5 days a week.

These guidelines are currently recommended by the (BHF, 2015) and are used across the UK for young people's participation. While these guidelines form the basis by which governments and other agencies assess levels and types of PA, the scientific evidence (although improving) continues to struggle in providing accurate assessment of a young people's PA (e.g., the amounts, types and intensities of PA and the time spent being sedentary throughout childhood and adolescence). The measurement of PA is discussed later in this chapter (p. 24) which will help to better understand the complexities involved in the assessment of PA.

Trends and Patterns in Participation

Participation in sufficient levels of PA in young people is a growing concern with many youngsters choosing to adopt more sedentary lifestyles over being physically active (Biddle, Coalter, O'Donovan, Nevill, & Whitehead, 2005; Inchley et al., 2008). This seems to be a global concern (Tremblay et al., 2014). For example, in the UK reports suggest that levels of PA in young people are showing no signs of improvement (Bromley et al., 2013; Currie et al., 2015). A Survey in the United States of America (USA) by the Center for Disease Control and Prevention (CDCP, 2009) found that 61.5% of young people aged 9-13 years do not participate in any organised PA during

their non-school hours and that 22.6% do not engage in any unstructured free-time PA.

Other studies have shown declines in young people's PA participation mostly occurs in late childhood and early adolescence. For example, Kjonniksen, Fjortoft, and Wold (2009) reported that participation rates in PA declined from ages 13 to 16 years for both genders. They carried out a 10-year longitudinal health behaviour study in Holland where 924 participants (mixed gender, aged 13 to 23) were questioned annually from 1990 - 2000. Also, Allison, Adlaf, Dwyer, Lysy, and Irving (2007) in their study, investigated young people's PA and found that declines in participation ranged from 14 to 18 for boys and girls. The BHF (2015) reported on levels of participation in England (based on PA recommendations) and found that declines occurred for boys and girls (aged 5 to 15) between 2008 and 2012. However, their results showed regional differences with more boys achieving recommended levels in the South East (25%) compared to South West (13%) of England. A more recent longitudinal study (Gateshead Millennium study, Farooq et al., 2017) showed no declines in young people's PA in early adolescence. The same study also showed that there were no differences in rates of declines between childhood and adolescence or between boys and girls.

Research mostly suggests that boys are more active than girls (Active Healthy Kids Canada, 2008; Canadian Fitness Lifestyle Research Institute, 2007) and that declines in participation mostly occur in girls (Currie et al., 2008; 2011; 2015; Nelson et al., 2006). However, Inchley, Kirby, and Currie (2008) in their study looking at PA among adolescents in Scotland found exception in walking and dance activities. Their findings showed that girls' overall PA participation was higher than boys, although, they also found that boys were more inclined to enjoy physical education (PE) compared to girls which continued throughout primary and secondary school.

In addressing the gender differences, previous initiatives have specifically targeted PA in girls with an emphasis on organised sports (Ithròttabandalag Reykjavìkur, 1998; Sportscotland, 2003). Nevertheless, recent research continues to report that levels of participation by girls remain low, and that many are not achieving sufficient levels of PA to benefit their health and well-being (BHF, 2015; Currie et al., 2015). More recent research has suggested that declines in boys' participation is on the increase. For example, the BHF (2015) found that declines in boys' participation was higher than girls between 2008 and 2012. The 2009 Scottish Health Survey (The Scottish Government, 2010) compared trends in boys' PA participation between 1998

and 2009, reporting difference in participation between 2003 and 2009 (74% and 69% respectively). But, even though boys' participation appears to be on the decline, the 2015, Scottish Health Survey (The Scottish Government, 2016) reported that boys (77%) are more likely to meet the PA guidelines (at least 60-minutes MVPA up to several hours every day) than girls (69%), although, sports participation levels were comparable (boys = 69%; girls = 66%).

Several studies have suggested that the main reasons for girls' non-participation is linked to sports activities and their heightened concerns over body shape, appearing incompetent, PE lessons with boys, and feeling that participation is associated to masculinity (BHF, 2015; Sportscotland, 2006). This was supported in a review conducted by Sport England (2002), although the same review identified similar reasons for female participation suggesting body shape and beauty were the main motives for participation. Also, Sport England (2002) emphasised that girls would more likely participate if the activities were enjoyable and provided an opportunity to engage with friends which are supported by more recent studies (Currie et al., 2015; Inchley et al., 2008).

Other studies have looked at motives for participation and PA adherence reporting positive associations with enjoyment, competence, and social interaction but body image related motivations were negatively associated (Frederick & Ryan, 1993). A report by Sportscotland (2006, p. 5) implied that policies were primarily focused on 'increasing physical activity rather than increasing participation in sport.' Sportscotland (2006) in the same report suggested declines in girls' participation in sports started at age 12 and continued to decline throughout adolescence. This finding is supported by other studies that suggest the transition from childhood into adolescent (transition from primary to secondary school) is when declines in participation in sport and exercise is most prevalent (Anderssen, Wold, & Torsheim, 2005; Biddle, Gorely, & Stensel, 2004; Sallis & Owen, 1999). Studies have also identified that declines occur during the period from adolescence to adulthood (Biddle, Gorely, & Stensel, 2004; Kjonniksen, Torsheim, Wold, 2008; Sallis & Owen, 1999).

There are several studies suggesting that adolescents participate in less PA than younger children (Janz, Lutuchy, Wenthe, & Levy, 2008; Bervoets, 2014), and that the reasons for this is because adolescents participate in less non-organised sports and vigorous PA (Van Mechelen, Twisk, Post, Snel, & Kemper, 2000). However, contrary to many studies, these reported declines mostly occurred in females (e.g., Kjonniksen et

al., 2009). A study by Corder, van Sluijs, Ekelund, Jones, and Griffin (2010) looking at PA amongst British children (aged 10 years), found that declines occurred prior to the transition from primary to secondary school and that declines were highest for females.

To explore these findings, and further understand the reasons behind these declines, the PA in Scottish schoolchildren (PASS; Inchley, Kirby, & Currie, 2008) project carried out a five-year longitudinal study to examine the patterns and determinants of PA during adolescents (including the transition from primary to secondary school). They collected data from schoolchildren (n = 641) using a mixed methods approach including self-report questionnaires and in-depth interviews. Some of their key findings included: (i) confirmation that participation in physical activity declined during the transition from primary to secondary with the greatest declines found in girls, (ii) those from higher affluent families showed no difference in levels of participation, (iii) no gender differences were reported during active travel to school although decreases for both genders occurred across the primary to secondary schools transition, (iv) passive modes of transport (i.e., buses and cars) increased during secondary school, (v) boys reported higher enjoyment of secondary school PE than girls, (vi) there was a decrease in break time physical activities post the transition for both genders although some boys continued to participate, (vii) girls were more likely than boys to report barriers to PA, and (viii) girls self-perceptions towards sports (e.g., competence, self-esteem, and physical self-worth) was lower than boys in secondary school. Although Inchley et al. (2008) highlight the types and levels of young people's PA behaviours in different contexts, they provide little information underpinning the reasons why youngsters choose to participate, choose not to participate, disengage from participation, or even re-engage in PA.

Adolescence presents many significant challenges for young people through which continued motivation and persistence can be critical in setting the foundations for future success in life (e.g., academic qualifications, work, healthy lifestyles and activity adherence, and development of appropriate social circles). These challenges can bring about patterns of de-motivation subsequently leading to non-adherence, and sometimes complete drop out from participation altogether within important domains such as PA, and can often occur at key stages in adolescence such as the transition from primary to secondary school (Waters, Lester, Wenden, & Cross, 2012).

Malina (2001) maintained that the transitions in life can be very complex and tend to be evident during the transition period from childhood to puberty and from

school to adulthood, and work. And yet, while such challenges are a natural and perhaps a crucial part of growing up, many children have been found to struggle (Wigfield, Eccles, Mac Iver, Reuman, & Midgley (1991).

The Impact on Participation during the Transition from Primary to Secondary School

Most school-aged young people progress from one school to another at some point during their education which in the UK typically occurs during the transition from primary to secondary school. For some young people, this transitional will bring about a range of social and organisational challenges such as changes in the school setting and academic structures, expectations and ethos, peer group relationships, personal status, and teacher-pupil relationships (Mullins & Irvin, 2000; Zeedyk et al., 2003). These concerns are similar in the UK (Inchley, Kirby, & Currie, 2008; Taylor, Spray, & Pearson, 2014) and globally including Australia (Waters, Lester, Wenden, & Cross 2012) and the US (Anderson, Jacobs, Schramm, & Splittgerber, 2000). While this period seems concerning for most school-aged youths, research suggests that three-quarters settle in very soon after entering secondary school (Evangelou, et al., 2008). A study by Waters et al. (2012) investigated primary school pupils (aged 12 – 13) pre-transitional concerns in PE and revealed that although over half anticipated pre-transition concerns, seventy percent (of pupils) reported positive experiences very soon after their transition into secondary school.

Although the research suggests that most school pupils have a positive experience during the transition from primary to secondary education, there are some pupils that have negative experiences. For example, research in academic performance suggests that those having a negative experience during the transition period subsequently go on to experience declines in academic motivation and performance outcomes as well as changes to self-concept and self-esteem (Benner & Graham, 2009). This can be particularly prevalent in secondary school PE where due to the nature of some activities (e.g., swimming and team-based activities), and the demands of the curriculum (e.g., pupils are required to participate in secondary school PE) pupil's self-concept and self-esteem is under threat. For example, in Scotland, young people experiencing negative transitions in high school may feel forced to participate in compulsory school PE activities (Scotland's Curriculum for Excellence [CfE], Scottish Government, 2015), which they don't enjoy, nor feel competent performing, therefore,

leading to feelings of low self-concept and self-esteem. Also, pupils (mostly girls) often report swimming during PE as when their self-concept and self-esteem are under the greatest amount of threat in secondary school (Inchley et al., 2008; Waters et al., 2012).

The Measurement of PA in Young people

The behavioural, epidemiological framework (discussed in the next section, p. 33) proposed by Sallis and Owen (1999) shows that there are important links between PA and health outcomes. The framework indicates that valid and reliable measurement is necessary to assess PA through which correlates can be identified. Correlates are used to help in the development of effective intervention strategies designed to promote PA participation. The terms validity and reliability are mostly used by academics in research to ensure certain levels of trust. To help understand the use of these terms in a PA context, Table 2.3 provides a description for PA and sedentary behaviour measurement.

In child and adolescent populations, the accurate assessment of PA is essential to research, policy and practice (Tremblay, 2014). Whether for determining health outcomes (positive and negative), monitoring population prevalence/trends (including sub-populations and high-risk groups), assessing the determinants/correlates, and monitoring/testing intervention strategies (Dollman et al., 2009; Tremblay, 2014). These reasons suggest that suitable approaches and instruments are necessary to assess levels of PA effectively. As such, the focus of this section is to examine the approaches and instruments that are often used to assess PA in young people along with some of the known advantages and challenges (considering validity and reliability).

Table 2.3 Description of terms for validity and reliability in physical activity and sedentary behaviour measurement (cited in Kelly, Fitzsimons, & Baker, 2016)

Validity – the extent to which a measurement is representative of the true scientific value; taking "true" to mean an exact representation of what happened, free from all possible sources of error or bias.	
Test validity (or Construct validity) – a combined assessment of face, content, and [concurrent, convergent or criterion]validity for your measure within the desired or utilised study population.	
Face validity	The extent to which a measure looks like it will, or appears to, provide the desired information. Assessed by expert consensus and theoretical consideration.
	Likewise for the proposed data processing and generation of outcome variables. Assessed by expert consensus and theoretical consideration.
Content validity	The extent to which a measure covers all aspects of the intended behavioural or physiological domains or dimensions (see Fig. 1). Assessed by examination of domain or dimension of interest.
	Likewise for the proposed data processing and generation of outcome variables.
Convergent validity	The extent of the agreement with another (non-criterion) measure that should assess the same PA or SB parameter based on face and content validity. Assessed quantitatively.
	Useful when the criterion is very resource intensive.
	This approach also allows assessment of whether the measures can be used interchangeably, or the data from the two measures pooled or otherwise compared.
Criterion validity	The extent of the agreement between a measure and another already held as being a criterion or gold standard. Assessed quantitatively. Called absolute validity when compared to measure known to provide perfectly true values.
Concurrent validity	Assessment of convergent or criterion validity when measures taken at same time.
Predictive validity	Assessment of convergent or criterion validity when measures taken at different times.
Experimental validity – a combined assessment of internal and external validity to determine whether conclusions drawn from the data are free from bias and generalizable to wider populations.	
Internal validity	The extent to which conclusions drawn from the experimental data are free from confounding issues which cause bias such as reactivity and missing data; similar to methodological quality. Assessed by examination of relevant issues.
External validity	The extent to which conclusions drawn from the data are generalizable to the wider populations. Assessed by examination of age, sex, ethnic origin, socio-economic status, etc., of study sample.
	This could be assessed by a theoretical justification or empirical demonstration such as field testing and small scale "proof of concept" studies. These should assess participant feedback (e.g. satisfaction and burden) as well as data issues (e.g. can meaningful information be produced in reasonable time frames?)
Reliability – the extent to which a tool gives measurements that are consistent, stable, and repeatable.	
Test-retest reliability	The extent to which test scores are consistent from one test administration to the next; keeping as many conditions (e.g. researcher, timing, preparation, etc.) as possible unchanged. Assessed quantitatively.
	This estimate incorporates any factors that cannot be controlled e.g. intra-rater reliability, behaviour change, etc.
Inter/intra-rater reliability	The extent to which test scores are consistent when measurements are taken by different people using the same methods (inter-rater) or at different times by the same person (inter-rater). Assessed quantitatively.
Inter/intra-instrument reliability	The extent to which test scores are consistent when measurements of the same thing are taken by different versions of the same instrument (inter-instrument) or repeatedly by the same version of an instrument (intra-instrument). Assessed quantitatively.
Behavioural reliability	The extent to which stability in behaviour has been considered when assessing other aspects of reliability.

Criterion Standards

In accordance with Sirard and Pate (2001), PA in young people can be assessed by three kinds of measures: primary measures (criterion standards), secondary measures (objective measures), and subjective measures. This is illustrated in Figure 2.2

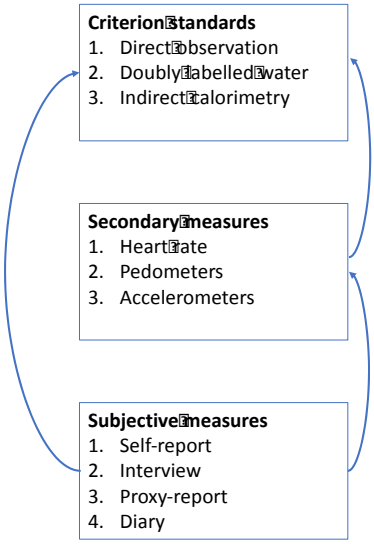


Figure 2.2 Validation Schema. Arrows indicate acceptable criterion standards for the validation of tertiary and secondary level methods (cited in Sirard and Pate, 2001)

Sirard and Pate (2001) have identified that the objective criterion standards for assessing PA are doubly labelled water and indirect calorimetry (see Figure 2.3 for definitions). The doubly labelled water technique is the more precise and widely acknowledged as a gold standard approach in assessing total daily energy expenditure in diverse populations (Hills, Mokhtar, & Byrne, 2014).

Doubly-Labelled Water

The use of doubly-labelled water to assess free-living energy expenditure is currently regarded as the gold standard technique. With a reported precision of ± 3%, this method serves as a reference for validating other instruments or methods designed to measure energy expenditure.

Doubly-labelled water is a non-invasive procedure involving the ingestion of a quantity of water labelled with a known concentration of naturally occurring, stable isotopes of hydrogen and oxygen. As energy is expended in the body, carbon dioxide and water are produced, and the differences between the isotope elimination rates are used to calculate total energy expenditure. This method can be carried out on a wide range of individuals over lengthy time periods, usually between 4 and 21 days, which is advantageous for capturing habitual energy expenditure patterns. However, the cost of materials and expertise required to analyse isotope concentrations via mass spectrometry prohibits the use of doubly-labelled water in large epidemiological studies.

Indirect Calorimetry

Indirect calorimetry is a technique that provides accurate estimates of energy expenditure from measures of carbon dioxide production and oxygen consumption during rest and steady-state exercise. There are open-and closed-circuit methods, and technology has advanced from the Douglas bag method to fully-portable, electronic equipment that provides continual and instantaneous breath-by-breath values of pulmonary gas exchange. Indirect calorimetry is carried out on an individual basis, which makes this a fairly time-consuming process ideal for smaller studies. Continuous gas exchange measures are normally limited to 1-5 hours, although when used for the purpose of individual calibration during heart rate monitoring, the requirement time is generally less than 1 hour for resting and exercise measures (depending on the number of activities involved in creating the calibration curve).

Figure 2.3 Gold standard used to accurately measure energy expenditure during physical activity, by Exercise and Physical Activity Resource Center (EPARC). Retrieved from http//eparc.ucsd.edu

While these are effective and valid techniques to estimate a person's energy expenditure (Seale, Rumpler, Conway, & Miles, 1990), they are, however, limited in their assessment of the type, frequency, duration, and the domain in which PA is performed (Kelly, Fitzsimons, & Baker, 2016). A study carried out by Emons, Groenenboom, Westerterp, and Saris (1992) comparing measurement techniques in children's PA suggested that doubly labelled water was the preferred technique compared to indirect calorimetry, which they found was limited by not measuring normal daily living conditions. Both techniques are expensive to administer and only assessed small numbers of participants compared to heart rate (HR) monitoring, which was cheap, easy to administer, and capable of assessing larger numbers of participants.

Sirard and Pate (2001) also identified direct observation as a criterion standard for assessing PA and described it as the most appropriate standard due to the practical nature of its approach in assessing PA compared to the other techniques which are laboratory based. This approach considered appropriate for use with smaller numbers of participants and is mostly used to collect context specific data such as in the school playground, PE, and recreational settings.

Nevertheless, while all these techniques discussed may be considered the gold standard (criterion validity, Table 2.3) for assessing accurately the energy expenditure levels of PA, they are time-consuming and costly (Dollman et al., 2009). Further drawbacks include the inability of any of these approaches to collect data about PA on a larger scale (e.g., higher numbers of participants). And even though direct observation is the more practical approach it has the potential for participant reactivity (concerns for internal validity, Table 2.3), and there are likely problems in gaining ethical approval particularly for child and adolescent participants (Dollman, 2009). The key attributes and limitations to do with all the assessment techniques discussed in this section are outlined and described in Tables 2.4 and 2.5.

Secondary (Objective) Measures

A secondary and less costly method used to measure PA in greater numbers of young people is HR monitoring and although activity levels may not be as accurately assessed (compared to the criterion measures), increased heart rate is directly influenced by increased PA suggesting increased energy expenditure (Emons, Groenenboom, Westerterp, & Saris, 1992; Vanhees, 2005).

However, HR as an approach to the measurement of PA has limitations such as equipment issues (i.e., setting up and reliability of polar heart rate monitors), the participant's ability to use equipment properly and their adherence to protocol (i.e., poor internal validity, Table 2.3). Further, in sedentary or less intense activities HR has been found to be influenced by other factors such as caffeine, psychological and environmental factors (i.e. poor external validity) (Livingstone et al., 1992). Furthermore, absolute differences between individuals should not be assessed using HR monitoring because fitter young people will have a lower HR response compared to those less fit (i.e., poor external validity) (Smith & Biddle, 2008).

Other secondary equipment-based methods include pedometers and accelerometers. Pedometers are mostly simple to use electronic devices used to estimate mileage walked or the number of steps taken over time or distance. Whereas, accelerometers are more sophisticated electronic devices that measure accelerations produced by body movement. Both are valid and inexpensive measurement tools used in PA research and practice (Tudor-Locke, Williams, Reis, & Pluto, 2004). Although, as with the HR monitor, these approaches are limited by issues to do with internal and external validity.

Table 2.4 Key attributes of common methods for measuring young people's physical activity (Dollman et al., 2009)

Characteristic	Heart rate monitoring[a]	Accelerometers[a]	Pedometers[a]	Direct observation[a]	Self-report[b]	Parent report[b]	Teacher report[b]	Diaries/logs[b]
Population (age)	5–18 years	3–18 years	5–18 years	3–18 years	10–18 years	3–9 years	5–9 years	10–18 years
Sample size	Small to medium	Small to large	Small to large	Small	Small to large	Small to large	Small to large	Small to large
Method/delivery mode	Chest strap to monitor heart rate, with a wristwatch display	Accelerometer usually worn on a belt over right hip	Usually worn on a belt over right hip	Naked eye or video/film observation. Electronic recording forms are available. Momentary time-sampling (e.g., multiple 3–15 s observations)	Questionnaire (pen and paper, electronic formats); Interview (telephone, face-to-face) formats sometimes used			Pen and paper; electronic formats. Periodic recording of activities in range of 1 min to several hours
Assessment time frame	One week is recommended to capture habitual PA			Variable (from one to multiple days)	Typically one-off assessment covering a 'usual' week, previous week, or previous 1–3 days			Typically 7 days to capture habitual PA
Data output	Heart rate in real time; algorithms to estimate intensity	Counts body movement (accelerations) in real time; algorithms convert to MVPA	Steps, distance (km)	Information on type, frequency, duration used to calculate time spent in different types of activities (organised and non-organised) and different intensities. Estimates of MET values based on adult compendium.[15] These values will underestimate intensities in young children				
Data entry and reduction	Complex	Complex	Simple	Simple	Manual data entry; scannable paper forms; computer-delivered versions allow automatic data entry. Data reduction required to compute PA variables			
Technical error	Low	Low	Low	Low	Large	Large	Large	Moderate

PA: physical activity; MET: metabolic equivalent; PA: physical activity; MVPA: moderate-to-vigorous PA.

[a] Objective measure.

[b] Subjective measure.

Table 2.5 Limitations and practical considerations associated with common methods of measuring young people's physical activity (Dollman et al., 2009)

Characteristic	Heart rate monitoring	Accelerometers	Pedometers	Direct Observation	Self-report	Parent report	Teacher report	Diaries/logs
Cost	High	High	Moderate	High	Low	Low	Low	Low
Sources of error and limitations on dimensions of PA captured	Heart rate response affected by ambient temperature, emotions, fitness. Not suitable for water activities. Heart rate remains elevated post-activity (may mask PA patterns). No information on type of PA	No standard protocol for data reduction. Insensitive to some movements (e.g., cycling, climbing). Some models not water-proof. Removed for contact sports. No information on type of PA	Insensitive to non-locomotive movements. Unsuitable for water activities. No/limited memory capacity. Susceptible to tampering/data loss. Removed for contact sports. No information on type, intensity or duration of PA	Potential for participant reactivity	Poor respondent memory and/or motivation. Susceptibility to socially desirable responses. Under-estimation of incidental activities. Incomplete entries/missing data. Low sensitivity to change. Individual variation in intensity within the same activities.			Potential for participant reactivity
Additional considerations	Should be individually calibrated for baseline heart rate and oxygen consumption. Chest straps can slip from position. Compliance issues can substantially reduce final sample	Must be individually programmed. May require log/diary to record times when not worn. Compliance issues (especially among adolescents and obese participants) can substantially reduce final sample	Must be individually calibrated for stride length and/or weight. Running distance under-estimated as stride set to walking pace. May require log/diary to record steps taken each day, and times when not worn. Compliance issues can substantially reduce final sample	Obtaining ethics approval to observe children maybe problematic	Computer availability for electronic admin varies among schools. Literacy levels among respondents can vary widely. Lists of PA cues need to be culturally appropriate			
Tips to improve compliance and/or data quality	Instruction sheet for correct placement of monitor. Sealing unit may reduce tampering. Log/diary to record when not worn and why. Reminders (e.g., sticky labels, text messages) to wear monitor. Provide incentives to wear for required number of days			Conduct observations more than once where possible/relevant. Non-intrusive observation needed to reduce reactivity	In class: circulate to keep students on task	Check responses with respondent		

PA: physical activity.

Subjective Measures

Other approaches used to assess PA include subjective measures such as interviews, proxy-reports (e.g., teacher and parent reports), and individual diaries. For reasons linked to assessing PA in large-scale populations along with low cost and convenience the Physical Activity Questionnaires (PAQs) are the self-assessments methods that are mostly used (WHO, 2009; Scottish Government, 2015; BHF, 2015). This includes the PAQ for Children (PAQ-C), which is frequently used to assess children's MVPA (Inchley, Kirby, & Currie, 2008) and is designed to be relatively quick to complete (<20

minutes), easy to understand, minimise staff burden, and inexpensive (Kowalski, Crocker, & Faulkner, 1997).

Indeed, Biddle, Gorely, Pearson, and Bull (2011) carried out a review of self-report measures used in young people and identified the PAQ-C as potentially the most suitable questionnaire for use in youth populations. In the same review, they also identified that the Physical Activity Questionnaire Adolescents (PAQ-A), the Youth Risk Behaviour Surveillance Survey (YRBS), and the Teen Health Survey (a shortened version of the YRBS) were also potentially suitable questionnaires. Bervoets et al. (2014) carried out a validity and reliability of the Dutch PAQs (PAQ-C and PAQ-A) for children and adolescence (aged 5-17). Their findings suggested that both questionnaires had acceptable to good validity and reliability for overall PA, and emphasised that the content validity was excellent. However, they also suggested that further testing is required towards providing a more complete assessment of both questionnaires.

For the PAQ-C questionnaire, other research has also demonstrated validity and reliability for the assessment of Spanish (Benitez-Porres et al., 2016) and Chinese children (Wang, Baranowski, Lau, Chen, & Pitkethley). Although Benitez-Porres et al., (2016) demonstrated high reliability in their study, validity was questionable due to their participants having problems completing the questionnaires. In common with many self-reporting measures of this nature, its design is limited by an individual's memory of their previous PA experiences (e.g., seven-day recall). Therefore, these types of subjective measures are considered less than favourable regarding the accuracy of measurement (compared to criterions standard measures), especially when working with child participants who are more likely to struggle with memory recall due to lower cognitive function compared to adults (Sirard & Pate, 2001). Bervoets et al. (2014) also highlighted 'parent-child agreement' as a limitation for the PAQ-C in their study and that this was due to parents helping their children to complete the questionnaires.

More recently, research has shown stronger or comparable validity and reliability for PAQs (PAQ-C and PAQ-A) for children and adolescence with congenital heart disease (CHD) than previous studies in healthy children (Voss, Dean, Gardner, Duncombe, & Harris, 2017). Their study was over a four-month period, which meant the reliability was limited because of the difference in respondent responses due to seasonal variations. Gobbi, Elliot, Varnier, & Carraro (2016) also supported the PAQ-C as an appropriate tool to assess levels of MVPA in Italian children with CHD,

although, their study was limited by a lack of ethnic representation (i.e., Caucasian Italians only) and the non-random sampling methods used for all three studies. Also, the low sample sizes for two of their studies could have affected the results. Moore et al. (2007) found that validity and reliability of the PAQ-C varied by race (i.e., European American, African American, and Hispanic children) suggesting that care should be taken when working with different ethnic and cultural populations.

As highlighted above, the accurate assessment of PA in young people is important to researchers, policy makers, and practitioners. As such, suitable approaches and instruments are necessary to measure levels of PA effectively, which, can then provide the relevant information to design and develop appropriate intervention strategies (Dollman et al., 2009). As there is no single assessment available to quantify all PA, some researchers recommend using multiple techniques such as simultaneous use of accelerometers and HR monitoring (Corder, Brage, Wareham, & Ekeland, 2005).

Several approaches can be used to assess PA in young people (Sirard & Pate, 2001). Although due to high cost and other limiting factors (e.g., unable to monitor population prevalence and trends), the preferred and most frequently used approaches are self-reporting questionnaires (BHF, 2015). Moreover, the study design in which self-report measurement is taken (e.g., the right questionnaire for certain purposes) is central towards ensuring adequate measurement properties, i.e., validity and reliability (Terwee et al., 2010). The most appropriate PAQs for assessing young people are the PAQ-C and the PAQ-A (Bervoets et al., 2014; Biddle, Gorley, Pearson, & Bull, 2011).

Considering these points, self-report methods seem to be the most common subjective choice of tool for assessing PA in young people (Boon, Hamlin, Steel, & Ross, 2008; Corder, Ekelund, Steele, Wareham, & Brage, 2008). Likewise, accelerometers are one of the most commonly used objective choice of tool (Corder et al., 2009). Nevertheless, as previously highlighted, given the subjective nature of self-report measures there are important and wider acknowledged concerns when assessing PA. For general PA measurement, self-report data is more likely to be predisposed to bias as a result of social desirability (Warnecke, et al., 1997; Schnurr et al., 2017). Also, the weight of evidence shows that young people overestimate their PA (Hjorth, Chaput, Michaelsen, Astrup, Tetens, & Sjodin, 2013) particularly for those activities which are vigorous in nature (Adamo, Prince, Tricco, Connor-Gorber, & Trembley, 2009; Sallis & Saelens, 2000). The limitations of self-report measures have influenced researchers to use more objective approaches to better evaluate PA (Tudor-Locke, &

Myers, 2001). It has been recognised that objective methods such as accelerometers capture PA more accurately than self-report. For example, accelerometer data has been used as a criterion measure in self-report validation studies for a long time (Freedson, 1991). Accelerometers capture a broader range of movement throughout the day and have also been shown to be an acceptable assessment tool for measuring children's PA intensity (Janz, Witt & Mahoney, 1995). However, it is important to acknowledge that these methods have limitations. For example, on their own they cannot determine behavioural and contextual information which is vital for PA promotion (Schnurr et al., 2017). Schnurr and colleagues have also suggested that accelerometers may underestimate the intensity of effort associated with certain activities including running and walking.

The implications of the findings of the review by Sallis and Saelens, (2000) suggest that although self-report measures have been shown to overestimate PA, when they are used in combination with objective measures such as accelerometers, their primary role may well be better suited to accumulating information on patterns of activity (i.e., context and type). However, while combined studies may provide more reliable and valid data, some researchers have found that subjective PA measures (e.g., self-report) are more appropriate than objective measures (e.g., accelerometers), and that this is because some young people feel uncomfortable (i.e., embarrassed or ashamed) when wearing the equipment (Kirby et al., 2012; Robertson et al., 2011).

The validity and reliability of these measures remain a concern (Moore et al., 2007). To address this concern, Kelly et al. (2016) have proposed the Edinburgh framework (first draft), which considers the diverse nature of measurement, validity, and reliability of PA. Their aim is to help provide a clear rationale and strategy for assessing any of the measures used in assessing PA (and sedentary behaviour). The first draft version of the Edinburgh framework is shown at Figure 2.4.

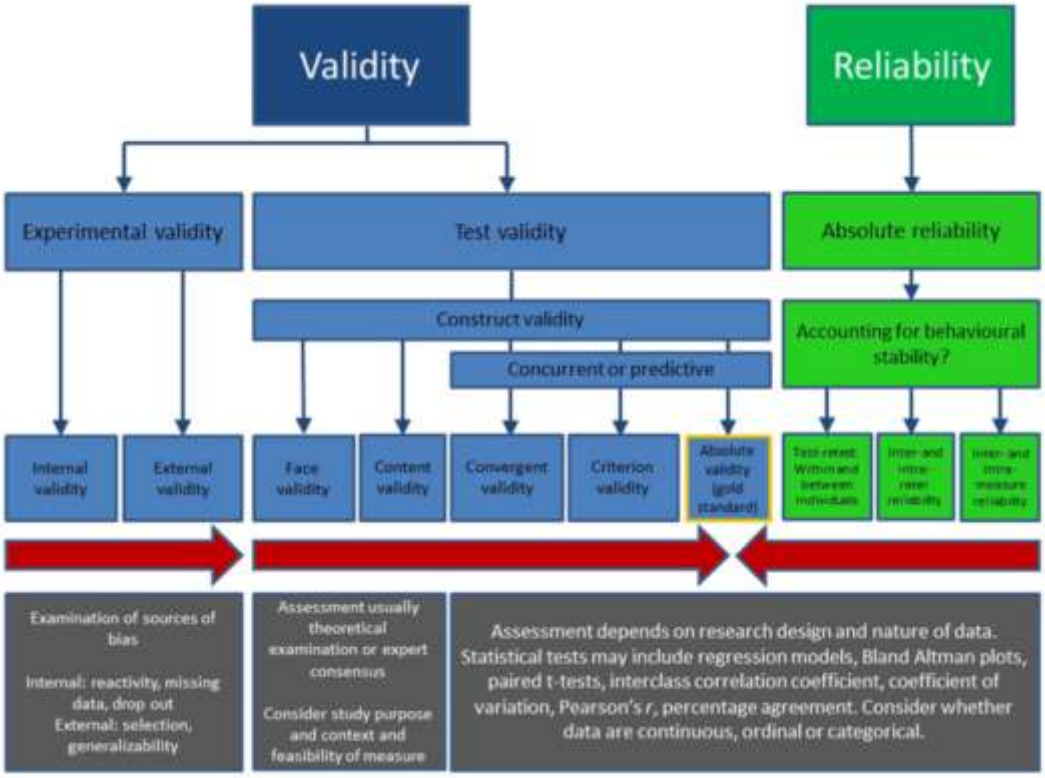


Figure 2.4 The Edinburgh Framework v1.0 for validity and reliability in physical activity and sedentary behaviour measurement (cited in Kelly, Fitzsimmons, & Baker, 2016)

The Importance of Understanding the Influences (Correlates) on PA Participation in Young People

The Behavioural Epidemiology Framework

As can be seen in the previous sections, PA and health research is a complex topic that covers a broad range of themes from laboratory research to public health practice. To better understand these complexities, behavioural researchers advocate the behavioural epidemiology framework (Sallis & Owen, 1999). The behavioural epidemiological framework model proposes a specific and systematic sequence of studies on health-related behaviours that lead to evidence-based interventions focused on populations (Sallis, Owen, & Fotheringham, 2000). The framework is a five-phased model in which once the PA and health link is established by appropriate assessment techniques, the demographic correlates of PA are then described (e.g., sex, ethnic group, socioeconomic status, and other variables). The correlates influence intervention strategies that subsequently translate into actions (practice). The word 'correlate(s)' is used throughout this text 'to reflect the factors that affect, or are thought to affect, participation in exercise PA' (Biddle, Mutrie, & Gorley, 2015, p. 13). The word

'determinant(s)' is used in the same context. However, the word 'correlate(s)' has become the term most used in literature such as pertaining to PA, health and well-being (Biddle et al., 2015). Therefore, correlate(s) is the term used throughout the remainder of this thesis. The Behavioral Epidemiological Framework is illustrated in Figure 2.5.

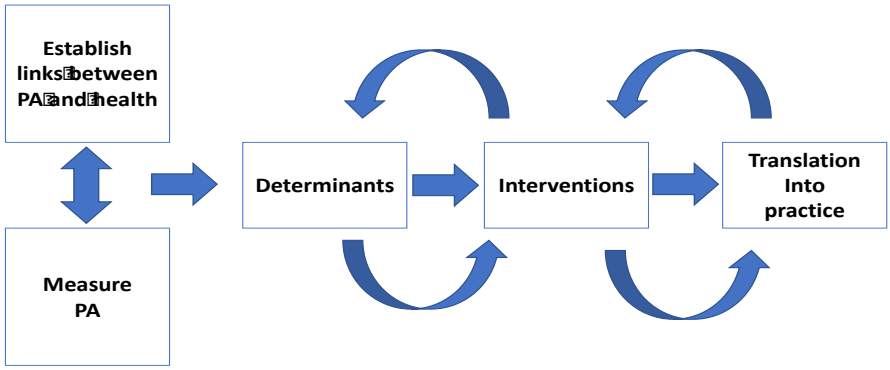


Figure 2.5 The Behavioural Epidemiological Framework (Sallis & Owen, 1999; cited in Biddle & Mutrie, 2008)

The five phases are defined and the process is briefly described in a PA context at Figure 2.6. The framework looks at the associations between people's behaviours, and the subsequent health and well-being related outcomes such as those people already physically active, why they are active, and how this information can be used to influence others to become active. It is important to highlight that the five-phase process is not linear and that reverse sequencing is possible in the research phases as illustrated by the arrows in the model in Figure 2.5. Biddle et al. (2015) provide an example of this reverse sequencing as follows:

> Measures of physical activity are developed and refined alongside tests of outcomes, and community projects are often established prior to convincing evidence, but may include a monitoring and evaluation element to test the efficacy of such an intervention before refining future interventions. The whole process then becomes iterative (p. 8).

1. *To establish the links between physical activity and health.* 'This is well documented for many diverse conditions as well as well-being' (Dishman et al., 2013; Lee et al., 2012).
2. *To develop methods for the accurate assessment of physical activity.* Large-scale surveillance of population trends often relies on self-reported levels of physical activity, a method that is fraught with validity and reliability problems. Recent 'objective' measures, such as movement sensors, heart rate monitors or pedometers are very important and useful, although they do not necessarily give all the information required, such as type of activity or the setting in which the activity took place. We must continue to develop better measures of the behaviours itself – physical activity – for the field to progress.
3. *To identify factors that are associated with different levels of physical activity.* Given the evidence supporting the beneficial effects of physical activity on health, it is important to identify factors that might be associated with the adoption and maintenance of the behaviour. This area is referred to as the study of 'correlates' or 'determinants' of physical activity.
4. *To evaluate interventions designed to promote physical activity.* Once a variable is identified as a correlate of physical activity (e.g. self-efficacy), then interventions can manipulate this variable to test if it is, in fact, a determinant. The number of intervention studies in physical activity is increasing (Foster et al., 2005; Heath et al., 2012).
5. *To translate findings from research into practice.* If interventions work, it is appropriate to translate such findings into ecological valid settings outside of the research environment.

Figure 2.6 The five main phases in the Behavioral Epidemiological Framework, (cited in Biddle et al. 2015, p. 7)

Social Ecological Framework

Why use the socio-ecological framework (model) for PA? As described earlier, PA behaviours and the influencing multiple factors are complicated. Existing ecological models provide a framework for researchers and policy makers alike to try and make sense of the many behaviours and factors that facilitate or act as barriers to participation in PA (Sallis et al., 2006). Also, these models are designed to help narrow down and understand specific issues relevant to participation such as within a specific PA context or setting (Atkin, van Sluijs, Dollman, Taylor, & Stanley, 2016). For example, identifying issues related to a specific population, therefore, providing pertinent information used to help design context specific intervention strategies.

The research suggests that policy, social and physical environments influence the ability or likelihood that a person will participate in PA (Mullins & Irvin, 2000; Zeedyk et al., 2003). People's behaviour is often difficult to change and particularly so if the environment in which they function does not facilitate change. Therefore, an individual's level of PA will more likely improve if the focus is on not just their choice of behaviour, but also on the factors that influence their choices (Bronfenbrenner, 1994).

Background to socio-ecological model. Participation in PA is a major public health priority and as such is of increasing interest to researchers, practitioners, and policymakers. More specifically, to those who have an interest towards improving levels of participation to meet the recommended guidelines and to understand better the nature of PA (i.e., the how's and the whys people participate). Historically, PA was assessed on exercise, leisure time, and recreational activities only (Sallis et al., 2006). As awareness grew, through the integration of data, methods, and concepts from within the field of planning and transportation, the way in which PA was perceived evolved. The term 'active living' was introduced as a concept to integrate PA and the environment into a broad range of everyday activities such as exercise, active transportation, household activities, occupational activities, and recreational activities (Sallis, Linton, & Kraft, 2005). This evolvement of PA led to the use of the ecological model used to help guide research, policy, and practice (Sallis et al., 2006).

The term ecology refers to the interrelationships between organisms and their environments. It originated from the field of biological sciences and has since been used in psychology, sociology, education, and other health orientated areas in exploring the nature of people's interaction with their environments. Ecological models are used in public health to indicate the way in which people interact with their socio-cultural and physical surroundings, and are well-known by their inclusion of policy and environmental variables that influence behaviour (Stokols, 1992).

Educating people on the healthy choices alone (e.g., the benefits of being PA) will not be effective in changing behaviours if the environments in which they are expected to participate are not supportive as well (Bronfenbrenner, 1979). The socio-ecological model recognises that facilitating positive change in behaviours will only likely occur if there are a combination of individual level, environmental, and policy intervention strategies in place.

The components of the socio-ecological model in PA. Sallis and Owen (1999, p. 133) suggested that behaviour theories and models should be used to guide studies and that 'the most promising models hypothesize that behavior is influenced by intrapersonal, social, and physical environmental behaviors.' Within PA the ecological models often comprise of individual (biological and psychological), interpersonal (social support and cultural norms and practices), environment (social, built and natural environments), and regional or national policy (i.e., laws, rules, regulations and codes, e.g., transport systems) components. An adapted version of the model by Bauman et al.

(2012) includes the global (e.g., economic development and social-cultural norms) as illustrated in Figure 2.7.

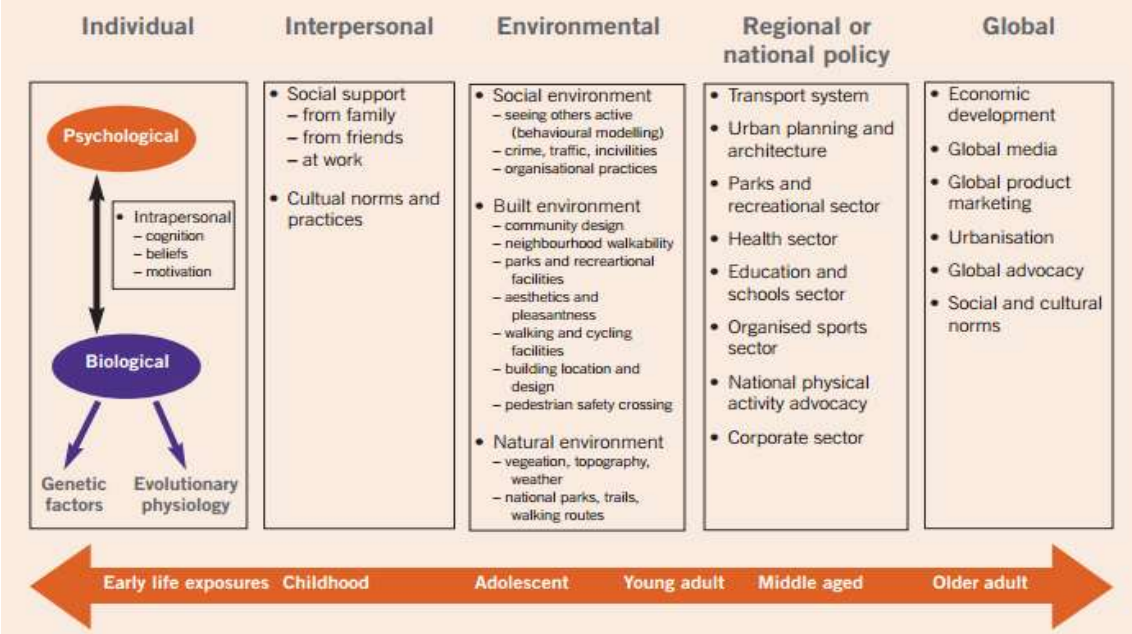


Figure 2.7 Adapted ecological model of the determinants of physical activity (from Bauman et al., 2012)

The study of PA (including PA in young people) through ecological models is particularly effective because PA integrates with the environment and subsequently is performed in a variety of domains such as parks, schools, and neighbourhood roads. Therefore, by studying PA in these domains can contribute to providing further and useful insight in determining what facilitates or hinders participation (Sallis et al., 2006). The ecological framework also suggests that prior to the planning of a PA intervention, the key factors need to be recognised. This is because PA behaviour is changed by some social, personal or environmental factor rather than by the intervention strategy (Biddle, Atkin, Cavill, & Foster, 2011). Subsequently, studying the correlates of PA can lead to the development of intervention strategies designed to improve participation.

What are the Correlates of PA in Young People?

As highlighted in the previous section the epidemiological framework demonstrates that intervention strategies can be designed to facilitate positive change in a person's behaviour. However, these interventions strategies 'need to be supported by evidence on the main factors thought to be linked with the behaviour. These factors are

'correlates' (Biddle, et al., 2015; p. 159), and it is these factors that are thought to be important influences towards the levels of PA participation (these factors are reflected in the third phase [replace 'determinants' with 'correlates'] of the behavioral epidemiological model). An understanding of these correlates particularly in low and middle-income populations could help to reduce the growing epidemics of inactivity and contribute to better global prevention of non-communicable disease (Bauman et al., 2012).

To inform and design effective behavioural change intervention strategies in young people, it is essential to identify the key robust evidenced based correlates (Atkin et al., 2016). The correlates of PA are often categorised as socio-demographic correlates (e.g., ethnic origin; SES, age, and gender), biological correlates (e.g., body mass index or body adiposity), psychological correlates (e.g., perceived competence, self-efficacy, attitude, and self-esteem), behavioural correlates (e.g., diet and previous PA), social correlates (e.g., parents and family support), and environmental (e.g., recreational facilities and neighbourhood safety).

The correlates may vary by the level in which they can be adapted, therefore, whether they perform primarily as a mediator or a moderator (Biddle, Atkin, Cavill, & Foster, 2011). This is determined by the way they are modified and thus whether they act as a moderator or a mediator. A mediator can be defined as 'an intervening causal psychosocial variable that is necessary to complete a causal-effect link between an intervention and physical activity' (Bauman, Sallis, Dzewaltowski, & Owen, 2002). For example, if a young person's PA behaviour changes because of teacher support (i.e., greater participation), the support from the teacher support is acting as a mediator of behavioural change. A moderator can be defined as 'a variable that affects the direction or strength of the relationship between an intervention and mediator or mediator and physical activity' (Bauman, et al., 2012). For example, active travel may increase PA for those from lower SES but not for those from higher SES. If so, SES is considered to act as the moderating factor.

Socio-Demographic and Biological Correlates

Socio-demographic correlates for young people normally include markers of age, gender, ethnicity, and SES.

Age and gender. It is often reported that one of the most consistent socio-demographic correlates in young people's PA is age and gender (Biddle et al., 2015).

Participation in PA is often reported to be at its highest in childhood with declines in participation mostly occurring as young people grow older (Biddle et al., 2011; Sterdt, Liersch, & Walter, 2014) particularly during late childhood and early adolescence (Sallis et al., 2000). In contrast, Uijtdewilligen et al. (2011) in their review of the literature, demonstrated (30 samples) that young people are more active in adolescence (aged 13 to 18) than in childhood (4 to 12). However, they also stated that only seven of the 30-samples used in their review were of high methodological quality.

These inconsistencies in age and PA are likely due to the way in which PA in young people is reported. This was highlighted by Biddle et al. (2015) as a limitation and that PA is generally assessed as 'total activity' rather than 'different types of activity' (such as sport or active travel). They suggested that by combining 'total activity' and 'different types of activities' would improve the accuracy in identifying the correlates. For example, Inchley et al. (2008) assessed young people's unstructured and structured activities and demonstrated that girls participate in more PA than boys through an accumulation of dance and active travel. Uijtdewilligen et al. (2011) stressed that many studies are limited by not providing sufficient information on validity and reliability.

When looking at gender, the data usually reports that boys are more active than girls in childhood and adolescence. This was demonstrated in a review of studies by Sallis et al. (2000) where boys were more active than girls in childhood (25 out of 31 studies with children) and in adolescence (27 out of 28 studies with adolescents). In Portugal, a study by Seabre, Mendonca, Thomis, Malina, and Maia (2011) found positive associations with age and PA in young people (aged 8-10), and that boys are four times more likely to participate in PA than girls. Husárová, Veselská, Sigmundová, and Gecková (2015) in their study looking at Slovak school aged young people (aged 11-14) reported that boys are more active than girls.

A review of 46 studies by Craggs, Corder, van Sluijs, and Griffin (2011), demonstrated that there were more declines in PA for girls than boys which they reported were highest in early childhood (aged 4 - 9). However, they also reported that there were no consistent associations found between gender and change in PA in older children (aged 10-13), although, they did report consistent associations for adolescents. Craggs and colleagues also suggested that gender differences in children decline with age. More recently, Sterdt et al. (2014) conducted a review of reviews looking at the correlates of PA of young people (aged 3-18) and reported that boys participate in more

PA than girls. Similar findings were reported by Bingham et al. (2014) although their review investigated only younger pre-school aged children (aged 0-6).

These findings raise some important points specifically that girls appear to participate in less PA than boys throughout their youth, and that it starts from an early age (Bingham et al., 2014; Craggs et al., 2011; Sterdt et al., 2014). Although, the small number of longitudinal studies investigating this have suggested that more work is required to more accurately establish whether differences in PA do exist between boys and girls particularly in early childhood (Bingham et al., 2014). If change is to occur then interventions are needed to start early. This is reinforced in recent review by Jones, Hinkley, Okely, and Salmon (2013) investigating tracking PA and sedentary behaviour through childhood and adolescence across the life course. Their findings highlight the importance of PA in the early years of life (e.g., early childhood) towards helping to improve participation levels and reducing sedentary behaviours in later years. More recently, Telema, Yang, Leskinen et al. (2013) demonstrated that habitual patterns in PA develop during the pre-school years.

Ethnicity. Much of the literature looking at the relationship between ethnicity and PA is inconclusive (Biddle et al., 2015). This has been highlighted in several reviews of the literature which have reported inconsistencies in the results for children (Hinkley, Crawford, Salmon, Okely, & Hesketh, 2008; Sallis et al., 2000). Previously, some reviews have suggested that white Caucasian adolescents are likely to be more PA than other ethnic populations (Gustafson, & Rhodes, 2006; Sallis et al., 2000, cited in Biddle, et al., 2011). In the UK, Townsend, Rutter, and Foster (2012) reported that PA was lower for those young people from Pakistan, India, and Bangladesh origins. In Germany, a review conducted by Lämmle, Worth and Bös (2012) found that less PA was influenced by immigration background in children, but not in adolescence. More recently, Eyre, Duncan, Birch, Cox, and Blackett (2015) investigated PA patterns in UK children (aged 7 – 9) from low SES backgrounds. They demonstrated that there were no ethnic differences for time spent in MVPA outside. Although, they found that those children from ethnic minorities spent significantly less time in MVPA inside than white Caucasian children.

SES. SES is frequently assessed as a combination of income, education, and occupation, and is commonly conceptualized as the social standing or class of an individual or group (American Psychology Association [APA], 2017). The research indicates that SES is an important PA correlate although the data can be unclear and is

often variable (Biddle et al. 2011; Biddle et al., 2015). For example, Stalsberg and Pedersen (2010) conducted a systematic review of the evidence looking at PA and SES in an adolescent population. They found that 58% of the studies investigated demonstrated that adolescents from high SES are more active than those from low SES. However, they also found that 42% (26 of 62 samples) of the included studies found no or an opposite (6 of 62 samples) association. Drenowatz et al. (2010) reported that children from low SES tended to participate in lower amounts of PA and spent more time being sedentary than those children from high SES. Drenowatz et al. (2010) in the same study found that children from low SES had higher BMI scores compared to those from high SES, and that this increased BMI may contribute to increased health risks particularly in later life. This finding is partially supported by Biddle et al. (2011) suggesting that high BMI is linked to lower PA in adolescent girls only.

There is evidence to suggest that young people from affluent families are more likely to participate in sport and exercise compared to those from less affluent families (Mota, Gomes, Almeida, Ribeiro, & Santos, 2007). Studies also suggest that family income is directly linked to PA participation during an out of school context (e.g., community sports and leisure facilities) and that low-income families are less likely to participate compared to high-income families (Inchley, Kirby, & Currie, 2008; Mota et al., 2007). Ferreira et al. (2006) support this in an adolescent context, however, for children they found no association between SES and PA. More recently, Sterdt et al. (2014) in their review found that younger children are less affected by SES because the nature of their PA are financially cheaper (e.g., more play orientated) compared to adolescents (e.g., more club sport based requiring clothing, fees, equipment, and travel).

Moreover, PA research tends to report on the costlier (e.g., financial through club membership, cost of travel, and equipment) structured activities such as sport and gym based, and less on the cheaper unstructured activities such as walking and playing (Karsten, 2006). However, some studies have associated high levels of PA with low SES through participation in unstructured PA (less costly). For example, Ogilvie, Mitchell, Mutrie, Petticrew, and Platt (2008) showed that young people from low SES backgrounds are more likely to participate in higher levels of PA through walking (e.g., to and from school) than those from higher SES.

Biological correlates. Several studies have reviewed biological correlates (Biddle, Whitehead, O'Donovan, & Nevil, 2005; Hinkley et al., 2008; Sallis et al., 2000; van der Horst et al., 2007) and the correlate most investigated in young people is

weight status (i.e., Body Mass Index [BMI] or body adiposity, Biddle et al., 2015). This correlate was reported by Sallis et al. (2000) as inconsistently linked with PA for children and adolescence. Hinkley et al (2008) and van der Horst et al. (2007) found no association, while a review by Biddle et el. (2005) reported a small negative association with PA and girls (6 of 8 samples). More recently, a review of reviews carried out by Sterdt et al. (2014) demonstrated inconsistent associations for children's PA and weight. For adolescents, they showed that higher BMI was negatively associated with PA in girls. It should be noted that most of these reviews (with the exception of Sterdt et al., 2014) were conducted close to a decade or more ago, and all of the studies reported on data from almost two decades ago including the most recent review by Sterdt, et al. (2014), which used studies between 2000 and 2009.

Psychological Correlates

The psychological correlates often reviewed in the context of young people's PA includes, for example, perceived competence, intention, self-efficacy, enjoyment, body attractiveness, the importance of appearance, physical self-worth, self-perception and perceived barriers (Biddle et al., 2011; Van der Horst et al., 2007).

Children. Several reviews have indicated that assessing psychological correlates in children can be difficult because of their limited cognitive abilities particularly in completing self-report measures (Sallis et al., 2000; Sterdt et al., 2014). Nevertheless, Sallis et al. (2000) showed perceived barriers to be the most consistent negative correlate for PA in children and that intention and preference for PA had consistent positive associations. For self-efficacy (an individual's judgement of his or her capabilities to perform given actions, Schunk, 1991, p. 207), perceived competence, and attitudes they demonstrated indeterminate relationships for children's PA. There were no relationships shown between the PA correlates for self-esteem and body image.

Van der Horst et al. (2007) found a strong positive association between self-efficacy and PA, although reported no associations between PA and self-perception, enjoyment and barriers towards participation. The finding on self-efficacy was supported by Craggs et al. (2011) although their conclusions were for older children aged 10-13 years. Other studies reported on broader age ranges typically aged 3-12 years (Sallis et al., 2000) and 4-12 years (Van der Horst et al., 2007). A recent review by Voskuil and Robbins (2015, p. 2014), conducted a concept analysis of youth PA

self-efficacy from which they defined youth PA self-efficacy as ‘a youth’s belief in his/her capabilities to participate and to choose PA despite existing barriers.

Adolescents. Sallis et al. (2000) found that intention to be active, achievement orientation, and perceived competence were all positively associated with PA in adolescents. Self-efficacy, attitudes, body image and enjoyment were inconsistently associated. They also found that there were no relationships between PA and self-motivation, self-esteem and perceived barriers. A review carried out by Craggs et al. (2011) showed (five of nine samples) that self-efficacy in adolescents were positively associated with PA suggesting that those with higher self-efficacy were less likely to decline from participation than those with lower self-efficacy. However, although their samples included follow-up measures, they only reported on participants aged 14 to 18, and that four of five samples were for girls only. Also, the samples used different self-report measures (e.g., 5-point scale; 6-point scale) which may have influenced their results (e.g. the range of values). Biddle et al. (2005) in their review demonstrated small-to-moderate associations for girls PA and self-efficacy (10 of 10 studies) although they reported on just girls aged 10-18. Biddle et al. (2005) also demonstrated positive associations between PA and perceived competence (four of five studies), enjoyment (seven of eight studies) and concerns about body weight and appearance (three of four studies). Negative associations were shown for perceived barriers (three of three studies).

More recently, Sterdt et al. (2014) carried out a review of reviews using a total of ten studies published between 2000 and 2009. They reported that three of four studies were positively associated with self-efficacy in adolescents PA. They reported this finding to be consistent because of the high methodological quality of one of the three studies investigated. In the same study, they reported positive associations for perceived competence, goal orientation (both two of two samples), attitudes; outcome expectations (two of three samples), and negative associations for perceived barriers (two of two samples). However, some of their samples did not report on children and adolescents independently. For example, Lubans, Foster, and Biddle (2008) in their study reported on young people aged 5 to 18 without grouping them into children and adolescent age brackets. By doing this suggests that their findings related to some of the psychological correlates (i.e., self-esteem), were reported differently than other studies that report on both children and adolescent age brackets (e.g., Sallis et al., 2000; Van der Horst et al. 2007). Subsequently, this suggests that there are inconsistencies in

the ways in which reviews of the literature are conducted with respect to age bracketing.

In addition to those psychological correlates highlighted above, researchers interested in the wider correlates of PA have explored young people's motives for participation including reasons for 'starting, maintaining or ceasing involvement' (Biddle, Mutrie, & Gorley, 2015, p. 170). Self-determination theory (SDT) is a psychological framework which is often used by researchers to understand a young person's motivation to take part in, and to continue to take part in, health-related behaviours such as PA (Ng et al., 2012). SDT is a comprehensive theoretical psychological framework, and as such, is discussed further in the next section.

Behavioural Correlates

Several reviews have addressed the behavioural correlates of PA in children and adolescents, and the correlates that are reported to have consistent associations with PA are previous PA and healthy diet (Biddle et al., 2011). For children, Sallis et al. (2000) demonstrated that there were positive relationships between both variables and children's PA. For adolescents, they found positive associations for previous PA only.

Sterdt et al. (2014) reported that sedentary time was not associated with PA which is consistent with previous reviews (Biddle et al. 2005; van der Horst et al., 2007). This contrasts with Pearson, Braithwaite, Biddle, van Sluijs, and Atkin (2014) who conducted a systematic review and meta-analysis of observational studies describing the relationship between PA and sedentary behaviour in young people (aged <18). Their finding suggested that there was significant (but small) negative association between sedentary behaviours and PA in children and adolescence.

The research suggests that previous PA is important and that fostering positive attitudes towards PA in childhood and adolescence is likely to result in the adoption of positive attitudes throughout a lifetime, which, will subsequently lead to improved health and well-being in adulthood. For example, Telama et al. (2005) carried out a longitudinal study exploring PA behaviours in young people (aged 9 to 18) and demonstrated that high levels of PA in childhood and adolescence predicts high levels of PA in adulthood.

The evidence for tracking young people's PA throughout childhood and adolescence is limited and the statistical association for patterns and trends of PA are mostly small (Biddle et al., 2015). Tracking young people's PA can be very difficult to

facilitate for several reasons including for ethical reasons, and because they require data of the same sample over at least two-time points (Jones et al., 2013). Nevertheless, studies show tracking of PA from early childhood into later childhood is small to moderate (e.g., Jones et al., 2013). Tracking in adolescence into adulthood is small to moderate (Telama et al., 2005). However, tracking throughout childhood and adolescence into adulthood appears to be underreported (Biddle et al., 2015).

Social Correlates

The social correlates usually focus on different types of parental styles, sibling, peer behaviours and support (Biddle et al., 2015). Early reviews have demonstrated strong associations for social correlates, particularly the influence that parents PA have on children's PA (Sallis, Morton, Stone, et al., 1992). However, later reviews have shown a lack of consistency for the social correlates including parents PA (modelling), parental support and peer influences (Ferreira et al., 2006; Sallis et al., 2000). More recently Laird, Fawkner, Kelly, McNamee, and Niven (2016) in their review and meta-analysis concluded that social support from parents, family, and friends had a positive (small) association with PA in adolescent girls.

Other comprehensive reviews and meta-analysis focusing on parental correlates only have shown positive associations for parental modelling and support of PA in young people (e.g. Edwardson, & Gorley, 2010; Pugliese, & Tinsley, 2007). These studies identified differences between age and level of support and parental modelling. For example, Pugliese and Tinsley (2007) found that there were lower associations between parental modelling in early adolescence compared to higher associations found in childhood and older adolescence. Specifically, they suggested that this was because of parental encouragement, which was related to child and adolescent age groups. This finding is consistent with a previous review conducted by Sallis, Prochaska, and Taylor (2000), regarding parental encouragement and instrumental behaviours.

Edwardson and Gorley (2010) showed that parental influence is important towards different intensities and types of PA in young people. They demonstrated that parents play an important role through modelling and support in children's MVPA, leisure time and overall PA. For adolescents, although less clear, they found that parents PA levels, attitudes towards PA and support through encouragement and transport, were important. The studies reviewed by Bauman et al. (2012) showed that parental modelling, specifically children's perception of their behaviours, was not

associated with child and adolescent PA. Although, they have shown positive associations between family support and child and adolescent PA.

More recently Sterdt et al. (2014) reported inconsistencies for parent modelling and positive relationships for parental support for children and adolescents. They highlighted the importance of socialisation of health-related behaviours from within the family and the relevance of parents to be well informed about the benefits of PA in childhood. These findings support the key point stated in Biddle et al. (2015, p. 65) that 'physical activity levels of children are likely to be influenced by the support and encouragement of their parents more than by how active their parents are.'

Yao and Rhodes (2015) conducted a meta-analysis from 112 studies. They argue that previous meta-analyses report on only 20-30 studies and that systematic reviews have been 'narrative in nature.' Nevertheless, their findings are consistent with other studies. They showed that there were positive associations between the influence of parents PA and children's PA, but also found that as children mature, the influence of their parents modelling decreases, and peer influences become more prevalent. Yao and Rhodes (2015) stated that they are the first to 'quantify the relationship between overall parental support and child PA.' They reported small positive associations in several support behaviours such as watching the child participate in PA, praising the child, engaging in parent child co-activity, providing the child with equipment and transporting the child to places where the child could be active. They reported parental encouragement had a moderate association which is consistent with other studies.

Environmental Correlates

For the environmental correlates of PA, the reviews typically centre on young people's time spent outdoors and their access to leisure and facilities (Bauman, 2012; Sallis et al., 2000). Several reviews have shown that time spent outdoors and access to facilities and programmes were positively and consistently associated with children's PA (Ferreira et al., 2006; Sallis et al., 2000). A recent review of reviews conducted by Sterdt et al. (2014) showed that the time children spend outdoors are consistently (e.g., parks and playgrounds) and positively associated with their participation in PA supporting the findings by Sallis et al. (2000) and Ferreira et al. (2006). For adolescents, Sterdt et al. (2014) reported a positive relationship between access and proximity to leisure and training facilities with increased levels of participation in PA in young people. This finding by Sterdt et al. (2014) is consistent with Sallis et al. (2000),

however, not by Ferreira et al. (2006) who found no relationship between adolescent PA and access to facilities.

Also, Ferreira (2006) reported on school PA policy environments (e.g., time spent outdoors, the number of field trips and free play), and showed that in 60% of their samples school policy environments were positively associated with children's PA. Sterdt et al. (2015) demonstrated positive associations for schools which mostly offer several opportunities for young people to participate in PA through extra-curricular activities, physical education and during break times. They found that schools that implemented well-developed PA programmes contributed to the prevention of obesity in young people.

Several reviews have found no association between neighbourhood deprivation and crime (e.g., crime, busy roads) with young people's PA (Davison & Lawson, 2006; Ferreira et al., 2006). However, Davison and Lawson (2006) reported positive associations for perceived neighbourhood safety. A recent study by O'Connor et al. (2014) supports this finding by Davisson and Lawson (2006) and suggests that by targeting parents to improve their perceptions of neighbourhood safety will help towards improving children's participation.

There are several issues related to inconsistencies in the reviews highlighted in this section (i.e., heterogeneity) to do with the correlates of PA in children and adolescence. Some of the explanations for these inconsistencies are, for example, the different methods used to assess PA (e.g., subjective measures such as self-report and objective measures such as accelerometers) and the various designs used, i.e., cross-sectional and longitudinal. Essentially, are the cross-sectional associations (i.e., correlates) always consistent with the longitudinal associations (i.e., determinants where the variable changes in some direction which then cause a resulting change in PA)? Other examples of inconsistency are the different statistical analysis used (e.g., multivariate and bivariate techniques), and the sample groups and sizes. For example, Craggs et al. (2011) in their review reported on children aged nine and under, children aged 10-13 years, and adolescents aged 14 years and older. A review by Biddle et al. (2005) categorised adolescents aged 10-18 years. These issues to do with the inconsistency of the reviews are consistent with previous findings (Sallis et al. 2000; Sterdt et al., 2014). Another important limitation highlighted by Sterdt et al. (2014) was that most of the reviews they studied did not differentiate between subgroups such as children and adolescents from socially disadvantaged backgrounds or migrant families.

As highlighted towards the end of the 'Psychological Correlates' sub-section above, SDT is an important psychological framework used to help further understand a young person's motivation and reasons to take part in, and to continue to participate in, health-related behaviours such as PA (Ng et al., 2012). As such, SDT is explored next.

Using the SDT Framework to Help Further Understand PA in Young People

In addressing young people's PA, it is important to understand the underpinning correlates that influence participation (i.e., socio-demographic, biological, psychological, behavioural, social and environmental). Ng, et al. (2012) in their meta-analysis found that from 184 samples, SDT is an important framework for the development of intervention strategies for improved physical health (including improved participation in physical exercise). They showed this by estimating the effect sizes of the relationships between important SDT concepts and several indicators of physical and mental health. Through path analysis they used the effect sizes to assess the network of interrelations between the variables used in their meta-analysis. Specifically, their findings demonstrated that domain orientated autonomy supporting strategies increased individual autonomy, relatedness and competence within a health behaviour context. They also demonstrated that controlled forms of regulation were negatively associated with PA. Ng et al. (2012) suggested that in health care, autonomy is emerging more as an important outcome particularly within medical ethics and that supporting autonomy is 'essentially being mandated for all physicians' (Ng et al., 2012, p. 337) when prescribing treatment protocol (including exercise). These studies add further weight to the need (at a psychological level) to utilise SDT in understanding a young person's motivation to take part in and to continue to take part in health-related behaviours such as PA.

Social cognitive theories, such as motivation, help to explain PA health behaviours (Plotnikoff, Costigan, Karunamuni, and Lubans (2013). Plotnikoff et al. (2013) write that by understanding the social cognitive factors that are influenced by young people's milieu is central since they guide theory-based interventions focussed on increasing PA. For example, in providing advice to significant others such as parents, teachers and coaches involved in young people's development on how to support PA which may then facilitate a means for increasing young people's motivation to participate. Indeed, there is growing evidence to suggest that theory-based

intervention is more effective than non-theoretical approaches in PA (Taylor, Conner, & Lawton, 2012). Motivation is the drive to act and is vital towards supporting PA. Specifically, understanding a young person's motivation to take part in and to continue to take part in health encouraging behaviours (i.e., PA) is important for the maintenance and improvement of their health. SDT is used by many researchers to study motivation in a PA context (Owen, Smith, Lubans, Ng, & Lonsdale, 2014; Teixeira, Carraca, Markland, Silva, & Ryan, 2012).

SDT is a broad theoretical framework that describes the intensities of behaviours and which is frequently used to examine the association between motivation and PA (Deci & Ryan, 2002). Systematic reviews of literature looking at SDT and PA in young people appear to be limited to just one review which was carried out by Owen et al. (2014). Their study reviewed forty-six studies that assessed the relationship between SDT and PA in children and adolescence (aged between five and 18 years). They concluded that SDT is beneficial towards understanding children and adolescence motivations for PA and subsequently, contributes towards positive health promoting behaviours. Specifically, they showed that more autonomous types of motivation were positively associated with PA than controlled types of motivation, and that motivation was a predictor of PA in leisure-time and school PE contexts.

In adults, other reviews have demonstrated the importance of SDT in a PA context. For example, Teixeira et al., (2012) in their review (66 samples) found that SDT provides a valuable contribution in understanding and promoting exercise behaviours and the importance of autonomy in supporting PA behaviours. They showed consistent support for a more positive association between autonomous motivation and PA than more controlled motivational motivations. Although they excluded children and adolescence from their study to focus on just adults, the outcomes were comparable to the findings by Owen et al. (2014) (investigating children and adolescence) in that autonomy appears to be key in promoting PA.

Although there are several motivational theories, SDT is a particularly useful approach for exploring motivational outcomes because of its emphasis on human needs, motivational processes (e.g., self-regulation), and social context (Ryan & Deci, 2002). SDT discriminates between autonomous and controlling (low autonomy) kinds of motivation that are made up from five motivation regulations, which, depending on the degree of self-determination present, fall along a continuum from completely autonomous to non-autonomous forms of behavioural regulation (Figure 2.8).

Controlled motives include introjected and external regulations. Introjected regulation occurs when behaviour is driven by feelings of contingent self-worth or guilt, whereas, external regulation involves behaviour driven by evading punishment or attainment of a reward. A final category is amotivation, which, is when there is a complete lack of motivation altogether (Ryan & Deci, 2000).

Autonomous motives include intrinsic motivation, integrated regulation, and identified regulation. Intrinsic motivation occurs when an individual participates in an activity for their personal interest or enjoyment and where no external influence is present, a state of absolute autonomy. Integrated regulation exists when one's actions are self-endorsed because they are personally valued. This regulation is the most autonomous type of extrinsic motivation. A lesser autonomous type of extrinsic motivation is identified regulation, which, is described when behaviours are more outcome focussed and viewed as personally beneficial and necessary (Ryan & Deci, 2000). Hagger and Chatzisarantis (2008, p. 87) stated that SDT sets out to describe motivation and behaviours based on contextual influences, interpersonal perceptions, and the different behaviours between individuals. According to SDT there are three basic psychological needs; the need for autonomy, the need to feel competent, and the need to feel a sense of relatedness.

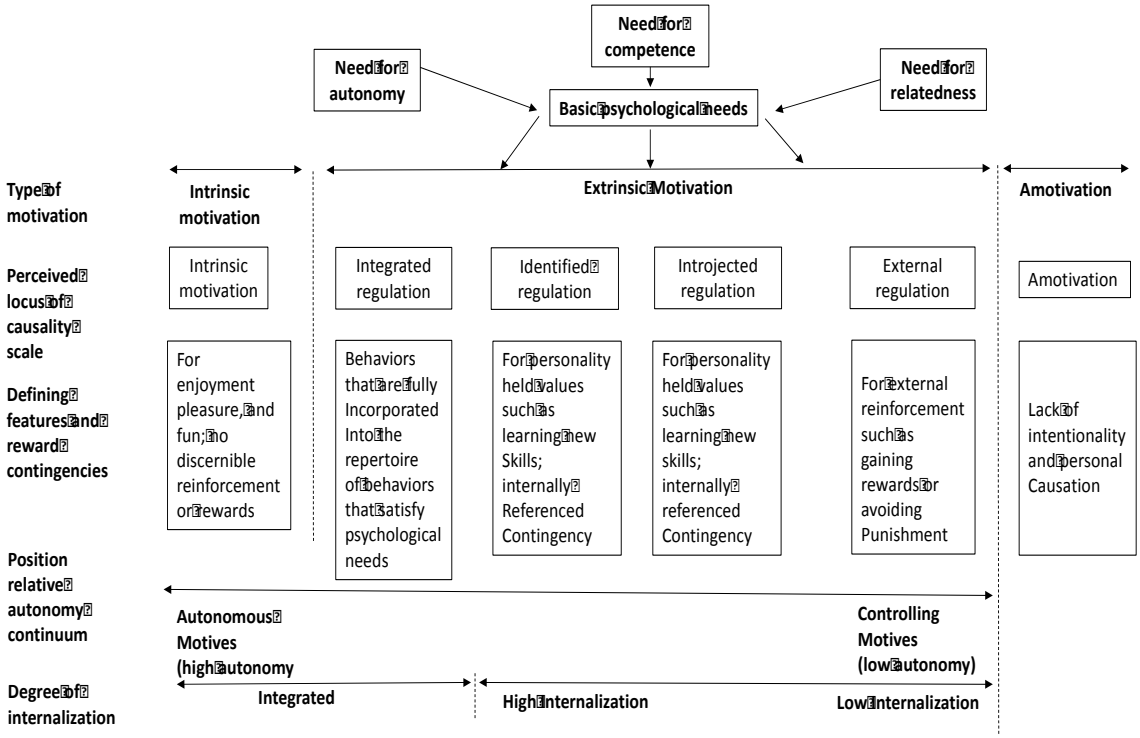


Figure 2.8 Schematic representation of self-determination theory illustrating the features of three of the component sub-theories: basic psychological needs theory, cognitive evaluation theory, and organismic integration theory. by M. S. Hagger and N. L. D. Chatzisarantis, 2007, Intrinsic Motivation and Self-Determination in Exercise and Sport, 1, p. 8. Copyright 2007 by Martin S. Hagger and Nikos L. D. Chatzisarantis

Autonomy (often referred to as self-determination) in the broader sense is a notion found in political, moral and bioethical philosophy and refers to the capacity of rationale individual to make an informed and un-coerced choice. It is a person's self-initiation of his or her own behaviour, or in attribution terms, it is derived from an internal locus of causality (de Charms, 1968). Not to be confused with independence, which, in contrast, suggests an individual as having a sense of 'self' only, therefore, not readily prepared to contribute or operate as part of the collective or team. In PA, studies have shown that improving levels of autonomy in young people is associated with increased PA. For example, Feda, Lambiase, McCarthy, Barkley, and Roemmich (2012) found that by offering children more choice of activity improved their levels of participation through their increased duration and intensity of PA, particularly in girls. More recently, this finding was supported by Sanders et al. (2016) who showed that levels of autonomy increase PA intensity levels in children.

Being competent is the ability to perform a specific task, action or function successfully and is facilitated through feelings of mastery of specific skills and is developed or maintained by successful performance through activity appropriate to the given environment (White, 1959). Carroll and Loumidis (2001) in their work looked at primary six aged children (n = 922) boys and girls, examining the relationship of children's perceived competence and enjoyment in a PE context. They found that children with high perceived competence participated in significantly more PA outside of the control of the school environment than those children with low perceived competence. Harter (1978) suggests that a person's perceived competence is vital towards their initial participation in any activity and that perhaps more importantly, their continued participation. This is supported in numerous studies which have shown that high levels of perceived competence are associated with high levels of PA (Craft, Pfeiffer, & Pivarnik, 2003; Harter, 1999; Parish & Treasure, 2003). In a sport context, where competency levels are likely to be more important, several studies have shown that low perceived competence has a negative association with participation. For

example, Sportscotland (2006) demonstrated that girls feeling low perceived competence did not want to participate in some sports.

Other studies looking at multiple-activities (e.g., sport, recreation and play) have shown that sport is the activity where young people feel the least competent (Mullan, Albinson, & Markland, 1997). Davison, Schmalz, and Downs (2010) investigating adolescent girls' aversion to PA used a variety of measures including self-report (i.e., Girls' Disinclination for Physical Activity Scale; Physical Activity Enjoyment Scale) and objective (accelerometer) to determine levels of MVPA through sports and running activities. Their findings suggested that low perceived competence was a key factor in girls avoiding participation in PA, particularly in adolescence (between 13 and 15 years) where perceived lack of skill was the most frequently reported reason.

Relatedness is a person's perceived level of meaningful connection with people such as parents, teachers, peer groups, and significant others. The need to belong is a fundamental human motivation (Baumeister & Leary, 1995) and is positively associated in the promotion of cooperation within large groups (De Cremer & Leonarddelli, 2003). In PA, studies have shown that relatedness is an important factor, and that support by significant others such as parents, friends/peers, teachers, and coaches can positively influence levels of participation (Gebremariam et al., 2012). Sportscotland (2006) reported that four out of five girls preferred having a friend with them when playing sport or being physically active, and that many girls reported not feeling comfortable participating without their friends. Gebremariam et al. (2012) demonstrated that support by parents and friends provided PA stability throughout the transition period from childhood into adolescence which is the period when declines in PA are mostly reported to occur (Anderson, Wold, & Torsheim, 2005; Biddle, Gorely, & Stensel, 2004; Sallis & Owen, 1999).

These basic needs described within the framework of SDT are not only essential for basic effective human functioning, but are vital for sustained and improved motivational performance, whereby, if any of the needs are thwarted, then levels motivation will decline (Ryan & Deci, 2000). Research suggests that by satisfying these basic human needs a state of flow is reached, which, for SDT is the ultimate desire or intrinsically motivated state in terms of an individual experience whilst participating in an activity (Deci & Ryan, 2002). This state of flow is described as when a person's mental state is considered to be in a full and optimal function whereby

they perceive themselves to be fully immersed in a feeling of energized focus, full involvement, and success in the process of an activity (Csíkszentmihályi, 1993)

In a PA context, it seems that the basic psychological needs are important, which, according to SDT, if any of these needs are thwarted then a person's inclination to participate will likely decline and even cease altogether. The ecological model helps to make sense of this by showing that individual psychological factors are important (Sallis et al., 2006). Specifically, robust evidence-based psychological correlates identified through several reviews have shown that factors including autonomy and perceived competence leads to enjoyment and as such are key towards improving levels of PA in young people (Craggs et al., 2011; Ng et al., 2012; Sterdt et al., 2014).

Chapter Summary

In this chapter, a review of the literature related to physical activity was carried out to help better understand the complex nature of physical activity in young people and to help place the PhD within the wider literature. This was achieved through exploring six key areas. Based on this review, the summary is as follows:

- There has been a growing literature on the concerns for health-related issues linked to poor participation rates of physical activity particularly in childhood and adolescence, which, given the widely reported benefits for health and future participation outcomes, continues to be a concern.

- The weight of evidence shows that there are challenges associated with the practicalities, validity and reliability of assessing and understanding physical activity. There is also inconsistency with the way in which studies report on young people's participation (e.g., age ranges, SES groups, regions and assessment tools).

- The behavioural epidemiological framework shows the importance of using a systematic approach towards understanding physical activity to inform intervention and policy.

- Studies show that socio-ecological models are useful to frame physical activity research, and recognise that participation and the multiple influencing factors are complicated. These models highlight the need to recognise the complex and context specific nature of physical activity, and utilise such information to inform intervention strategies.

- The term correlate(s) is used to describe factors associated with young people's physical activity participation, and are often categorised or described under the headings of socio-demographic, biological, psychological, behavioural, social and

environmental.

- The correlates often reviewed for young people's participation in physical activity include age, gender, ethnicity, SES, BMI, sedentary behaviours, parenting styles, siblings, peer behaviours and support, time spent outdoors, and access to leisure and facilities and psychological factors.

- The weight of evidence shows that populations including young people, those from low SES backgrounds and females are particularly important to investigate further. With regards to psychological factors, evidence suggests that self-determination theory is a robust framework to investigate physical activity motives.

The literature review in this chapter highlighted some key areas which helped to direct the focus of the PhD and methodologies adopted. First, it is clear that the nature of physical activity participation is complex, multi-faceted and context specific. As such, it was deemed important to attempt to capture the complexity of physical activity types, patterns, influences and barriers. To facilitate this, studies two and three adopted qualitative methodology. Second, physical activity patterns change over time, where early experiences may be particularly important for continued and lifelong participation. Because of this, it was deemed important to investigate young people across the PhD, with studies two and three also aiming to understand the nature and context of activity patterns, influencers and barriers retrospectively from early childhood through the perspective of both young people and physical education professionals. Third, it is clear from the literature that SES and gender are important variables due to the lower patterns of activity often associated with these groups. All three studies therefore adopted samples with consideration of these factors. Finally, self-determination theory was shown to be a robust framework to investigate psychological factors associated wth physical activity, and was utilised throughout all three studies.

While it is clear from the literature that further investigation of young people's physical activity in a Scottish context is important, from a pragmatic perspective, this context was chosen due to the location of the researcher and access to the sample, and also a specific interest in the welfare of young people in Scotland. It is important to note that the emergence of the research question for study one was initially borne out of a pragmatic and personal interest in understanding one element of physical activity participation (i.e., sport club participation) and associated motivational factors in the Edinburgh region. This is discussed further in the reflection section of study one, however, it is important to acknowledge that at the time of the design of this study in

2010, the pragmatic rationale and consideration of research methodology was without a full appreciation for the wider physical activity literature presented in this literature review. Notwithstanding limitations (outlined in study one reflection), study one aimed to provide a specific quantitative examination of structured club participation from a self-determination perspective within the context outlined above (e.g., SES, gender, Edinburgh context, young people). Alongside an improving appreciation of the literature, study one also acted as a catalyst for adopting a more critical approach along my PhD journey, and led to the adoption of qualitative methodologies and a broader examination of the complexities of physical activity through studies two and three, resulting in a mixed methods PhD to emerge.

Finally, as can be the case with a programme of research, emerging results also guided the development of the PhD and subsequent focus along the journey. In this case, it was the emergence of the importance of physical education and associated challenges for physical educators in providing good quality experiences for young people. This consideration is relevant for understanding where this PhD fits within the wider literature. Although there is an increasing academic interest in Scottish physical education, there is currently a dearth of research examining professional issues within a Scottish physical education context. Due to the emergence of this focus of the PhD through studies two and three, the decision was made to present the literature base related to physical education in studies two and three, but not within this chapter.

Statement of Purpose of the Thesis

This thesis adopts a mixed methods approach to investigate the ‘nature of PA and associated motivations in young people. A multilevel sequential mixed methods design (Giacobbi, Poczwardowski, & Hager, 2005) is used, and will involve collecting qualitative data after a quantitative study to help understand further the quantitative data in more depth (Creswell, 2014). To begin with, a quantitative approach will use frequency of weekly club activity sessions and motivation questionnaires to investigate the frequency of weekly club activity sessions and motivational factors in a sample of 133 young people from higher and lower socioeconomic status (SES) backgrounds in a Scottish context. Following on from this approach, the first qualitative study will use semi-structured interviews to investigate the PA experiences across the childhood and adolescent development stages of 18 Scottish youths from a low SES catchment (all of whom volunteered to participate in a secondary school PE and recreational

programme). A second qualitative study will also use semi-structured interviews to follow up on the first qualitative study to investigate the nature of PA in young people and associated motivational influences within a Scottish context, from the perspective of six qualified Scottish PE teachers, knowledgeable on policy issues and active in the development of future teachers.

The reason for this thesis is to throw new light over the issues surrounding the complex nature of PA in young people (Tremblay, 2014). The reason for collecting quantitative and qualitative data is to bring together the strengths of both forms of research to further explore, compare and corroborate results from different perspectives.

Chapter Three – Study One

Study one: To investigate using quantitative research, the frequency of weekly club activity sessions and motivational factors in a sample of 133 young people from high and low socio-economic status (SES) backgrounds within a Scottish context.

Introduction

Research suggests taking part in regular amounts of physical activity (PA) contributes to positive health and well-being outcomes (British Heart Foundation [BHF], 2015; Department of Health [DoH], 2011), and that participation in childhood and adolescence is important towards ensuring continued participation in adulthood (Biddle & Mutrie, 2008). The Chief Medical Officers (CMOs) recommendation for UK is that all children and young people should engage in moderate to vigorous intensity PA for at least 60-minutes and up to several hours every day (DoH, 2011).

Participation in sports is one of the more commonly referred to PA domains for young people and often used as a proxy for PA. Subsequently, investigations of PA are frequently through involvement in sports and other structured club-based activities. Research highlights that many children are not active enough, and within these domains certain groups have been shown to be at greater risk of leading sedentary lifestyles (Craft et al., 2003; Sportscotland, 2006; The Scottish Government, 2016). For example, Vilhjalmsson and Kristjansdottir (2003) reported on PA in an organised sports club context and showed that more boys were active sports club participants than girls (57% vs. 44%). More recently, Lämmle, Worth, and Bos (2012) investigated young people's (aged 6-17) socio-correlates of PA and physical fitness through their participation in sports clubs. They found that children and adolescents from lower SES backgrounds took part in less PA than those from higher SES backgrounds.

The benefits of sports participation in young people was shown by Telford et al. (2016). They carried out a longitudinal investigation into the effect of sports participation on PA, body fat, and fitness changes in children and adolescence. Their findings suggested that young people participating in sports resulted in a number of benefits including more time engaged in moderate to vigorous physical activity (MVPA), more active on a daily basis, better cardio respiratory fitness compared to those not participating in sports and spent less time being sedentary. They also found

that girls belonging to a sports club had less percent body fat. However, their study did not account for the differences in frequency, duration, nor the type of sports participants performed.

Studies have shown that young people participating in organised sports activities can lead to continued and higher levels of participation (mostly sports) in adulthood (Tammelin, Näyhä, Hills, & Järvelin, 2003). This finding contradicts other studies which have suggested that for many young people sports is associated with their decline and avoidance from not only sports-based activities, but also, other forms of PA (Davison et al., 2010). As such, it is clear that individual and environmental factors (e.g., the nature of the activity, personal competence) have a significant role in moderating the impact an activity has on enjoyment and future participation. For example, some studies have shown that providing young people have developed the necessary skills and abilities (e.g., through school PE), then they are more likely to participate in a broader range of PA (Carroll & Loumidis, 2001).

Research has also shown that the nature of motivation can influence individual attitudes and behaviours towards their participation. For example, Ryan, Frederick, Lepes, Rubio, and Sheldon (1997) found that intrinsic motivation facilitates long-term adherence, enjoyment, competence, and social interaction within a physical exercise settings. Balish, McLaren, Rainham, and Blanchard (2014) in their review looking at the correlates of youth sports attrition found that intrinsic motivation is an important psychological factor for activity adherence. Perceived autonomy (often referred to as being self-determined) is another important psychological factor. Autonomy is a person's perception of their internal locus of causality (behaviour is self-governed or determined), which, self-determination theory (SDT) postulates as being fundamental for participation (Ryan & Deci, 2000). While SDT promotes autonomy as a separate factor that individuals strive to satisfy, it has also been shown to be a vital function for perceived competence, where levels of competence may not increase a person's intrinsic motivation unless accompanied by a sense of autonomy (deCharms, 1968). Several studies support this suggesting that levels of self-determination and perceived competence are directly associated with participation (Craft et al., 2003; Davison et al., 2010).

These psychological factors appear to be important in sports domains. For example, Sportscotland (2006) reported that 35% of girls did not perceive themselves to be competent at performing sport, which subsequently had negative implications for

their long-term participation. The development of competence appears to be important in childhood for PA in later years. For example, Barnet, Beurden, Morgan, Brooks, and Beard (2009) carried out a longitudinal study looking at competence as a predictor of PA in adolescence. They demonstrated that skill proficiency developed in primary school predicted the likelihood that adolescents would participate in more vigorous activity, although not necessarily in organised activities.

The evidence suggests that participation by children and adolescence in structured sports activities is low particularly for girls (Husárová et al., 2015), and for those from lower SES backgrounds (Lämmle et al., 2012). Furthermore, individual basic needs such as autonomous forms of motivation and competency have been shown to play an important role towards participation, and while intrinsic motivation is the preferred motivation, and is often very high in early childhood, it has been reported to reduce in later childhood and early adolescence (Ryan & Deci, 2002). Ryan and Deci (2002) suggested that this period is when young people are required to carry out less attractive tasks (e.g., educational tasks), and where social demands can be higher such as peer pressure. Therefore, it is important that more work is carried out to examine participation by investigating, for example, those high-risk groups (female and low SES young people), and the role that SDT plays.

The purpose of this study is to carry out an investigation of weekly club activity sessions and motivational factors in a sample of young people within a Scottish context. Specifically, there are three research questions as follows: (1) Are there differences in the amounts of weekly club activities in young people by gender and SES? (2) are there differences in the motivational factors intrinsic motivation (IM), perceived competence and self-determination (SD) by gender and SES? And, (3) which characteristics (gender, SES, IM, PC, SD) are the most important predictors of weekly club activities?

Method

Participants

A sample of school pupils was recruited from five schools in the Lothians of Scotland. All schools were recruited based on their SES to ensure a range of participants from different backgrounds. SES was calculated using the 2012 Scottish index of multiple deprivation (SIMD, 2012) derived from each of the school's post code. Children and adolescent pupils in year groups six to eight were invited to participate in the study.

The final sample of participants of the current study was 133 (boys = 64 and girls = 69; lower SES = 54 and higher SES = 79). Each participant's SES was calculated from their own postcode detailed below. The mean age of participants was 10.7 years (SD = 0.96). The study procedures were approved by the Edinburgh Napier University Ethics Committee.

Measures

SES. SES was calculated using the 2012 Scottish Index for Multiple Deprivation (SIMD), derived from each participant's home postcode. The SIMD is a measure of compound social and material deprivation, calculated from a variety of data including, employment, education, income, health, and housing. For the calculation of SIMD, Scotland is divided into 6,505 small areas, called data zones, each containing around 350 households that are ranked according to their deprivation score from 1 (most deprived) to 6,505 (least deprived) (SIMD, 2012). The 15% most deprived areas have been the most used cut off point for investigations into low SES (SIMD 2012). For the remainder of this study SES categorisations will be referred to as 'higher' and 'lower.'

Weekly Club Activity Sessions. The weekly club activity sessions were assessed with four questions. Question one (school clubs/sessions), 'At the moment, how many school sport or physical activity club/sessions do you go to at least one time per week?'; Question two (school clubs/sessions), 'What are the school sport or physical activity clubs/sessions you go to and on what day(s) do they take place?' (schools' physical education (PE) was not included as a weekly club activity session); Question three (non-school clubs/sessions), 'At the moment, how many sport or physical activity clubs/sessions (not school clubs, or guides, scouts etc) do you go to at least one time per week?'; and question four (non-school clubs/sessions), 'What are the sports or physical activities you go to (not school clubs/sessions) and on what day(s) do they take place?'

All questions were taken from the Young People's Questionnaires (1 and 2), which was a tool that has previously been used within a Scottish youth context to measure club participation (Abbott, Collins, Sowerby, & Martindale, 2007; Jess & Collins, 2003) (see Appendix 3.1). As far as can be determined, no studies have been conducted to determine the validity or reliability of these questions.

Motivational Factors

Intrinsic motivation was measured using the self-motivation inventory modified for children (Biddle et al., 1996; Weiss, Bredemeier, & Shewchuk, 1985). Twenty items were used to measure intrinsic motivation (e.g., 'I love doing exercise and plating energetic games"; "I like to do things that challenge me'). Answers for these items were given on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous work has demonstrated good psychometric properties for the self-motivation scale modified for children (Biddle et al., 1996).

Perceived competence was measured using the physical competence scale of the self-description questionnaire (Marsh, 1996b). Eight items were used to measure perceived physical competence (e.g., 'I'm good at throwing a ball'; 'I am good at sports'). Answers for these items were given on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous work has demonstrated good psychometric properties for the physical competence scale of self-description questionnaire (Marsh, 1996a).

The locus of causality for exercise scale (Markland & Hardy, 1997) was used as a measure of self-determination. Eight items were used to measure self-determination (Deci & Ryan, 1985) (e.g., 'I exercise and play games because I like to rather than because I feel I have to'; 'If I could choose what to do, I would run around and play games'). Answers for these items were given on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Previous work has demonstrated good psychometric properties for the locus of causality for exercise scale (Markland & Hardy, 1997).

Cronbach's alpha (Tavakol & Dennick, 2011) was used to calculate scale reliability for the items in each group (IM, PC, SD). The subscale of Cronbach's alpha ranged between .75 and .83 (intrinsic motivation, α = .75, perceived competence, α = .83, self-determination, α = .79) indicating that all the constructs measured had high levels of internal consistency (Tavakol & Dennick, 2011).

Procedures

A combination of face-to-face meetings, exchange of emails and telephone conversations with head teachers (and heads of departments) from each school was used to disclose and discuss details of the intended research and their permission to go-ahead. Those teachers agreeing to the study, then authorised the distribution of parental consent letters via their schools (Appendix 3.2).

All the participants were informed that the study was voluntary and that they could withdraw at any time. Ethical and confidentiality issues were dealt with in line with Edinburgh Napier University Ethics Committee Guidelines. Therefore, only those participants with returned and signed consent forms were eligible to participate. Once the consent forms were completed, the participants filled in the questionnaires during in-school quiet classroom conditions and under the supervision of the schoolteachers (approximately 30 minutes).

In preventing unnecessary disturbance to each schools' syllabus,' all of the teachers preferred to organise the distribution, completion and collection of the questionnaires. In addition, all the teachers preferred the study to be carried out during the school hours. All the participants were informed that there are no right or wrong answers expected for the questions contained within the questionnaires. They were reassured of the confidentiality of their responses and were encouraged to ask questions if necessary throughout the duration of the study.

Data Analysis

Data were analysed using SPSS v. 20 (SPSS, Inc., Chicago, IL). All variables were checked for normality and visual inspection of these histograms, and the Shapiro-Wilk test confirmed normal distribution. However, some of the points of residuals were not met (i.e., outliers). These were then recorded and inspected for erroneous or missing data, although none were removed as they were not considered to lead to high influence in any of the analysis performed in this study (Orr, Sackett, & Dubois, 1991).

In determining sample size for Analysis of Variance (ANOVA), the recommended minimum number of participants required is 30 per cell (Cohen, 1988). In the present study, the actual numbers of participants per cell were in line with the criteria for determining sample sizes (gender, boys = 64 and girls = 69; SES, lower SES = 54 and higher SES = 79).

For correlations and regressions, the minimum number of participants required equates to the number of independent variables (Green, 1991; Harris, 1985). Harris (1985) suggested that the minimum number of participants should exceed the number of predictors by at least 50. In the present study, only five predictors are used. Therefore, based on Harris's (1985) formula, (i.e., the total number of participants equals the number of predictor variables (n = 5 plus 50) the minimum participants required in the present study was 55. The actual number of participants in the present study was 133

which exceeds the minimum requirement. Therefore, in line with the criteria for determining acceptable sample sizes (Green, 1991; Harris, 1985), correlations and regressions were performed.

To examine the differences in young people's frequency of weekly club activities, groups were formed.

1. Two context specific weekly activity groups were formed as school club activity sessions (SCAS) and out-of-school club activity sessions (OSCAS). SCAS and OSCAS were combined to form overall club activity sessions (OCAS).
2. Five frequency groups of weekly club activities were formed as those participants' reporting no sessions, one session, two sessions, three sessions, and more than three sessions.
3. Low and high SES groups were formed as 'low' (15% most deprived) and 'high' (85% least deprived) SES groups. SES was calculated using the SIMD (2012) derived from each participant's post code. The 15% most deprived areas have been the most used cut off point for investigations into low SES (SIMD 2012).

For ANOVA analyses, the magnitudes of effects sizes (small = .01; moderate = .06; large = .14) were taken from Cohen (1998) and Miles and Shevlin, (2001). For associations analyses, magnitudes of effect sizes (small = .2; medium = .3; large = .50) were taken from Field (2013, p. 82). Statistical significance was defined as $p < .05$ for all tests with data presented as mean (SD) unless otherwise stated.

In addressing question one ('are there any differences in the frequency of weekly activity sessions in young people by gender and SES?'), Chi-square tests of independence were carried out to compare the frequency of weekly club activity sessions (OCAS, SCAS and OSCAS) in gender and SES. ANOVAs were then performed to examine the differences in mean levels of the frequency in weekly club activity sessions by gender and SES. In addressing question two ('are there any differences in the motivational factors such as IM, intrinsic motivation, PC, perceived competence, and SD, self-determination?'), ANOVAs were performed to examine the differences in mean levels of the motivational factors associated with the frequency in weekly club activities by gender and SES. In addressing question three ('which

characteristics [gender, SES, IM, PC, SD] are the most important predictors of weekly club activities?'), correlations were used to examine the simple relationships between the variables. Following on from this, three multiple regression analyses were carried out to determine which of the five characteristics (gender, SES, IM, PC, SD) were important predictors of the frequency of weekly club activity sessions (OCAS; SCAS; OSCAS).

Results

Frequency of Weekly Club Activity Sessions

Overall club activity sessions. Table 3.1a shows that from a total of 133 participants, 15.7% reported 'no sessions,' 18.8% reported 'one session,' 14.3% reported 'two sessions,' 15% reported 'three sessions,' and 36.1% reported 'more than three sessions.' There were significant differences between frequency of overall weekly club activity sessions and SES $\chi^2(4) = 31.26$, $p < .001$. Participants from higher SES (n=79) participated in more overall weekly club activity sessions in almost all the frequency groupings (two; three; more than three) than those from lower SES (n=54). For example, over 80% of those from higher SES backgrounds took part in two or more sessions per week compared to 39% of those from lower SES backgrounds. Furthermore, almost seven times as many participants from lower SES than higher SES reported taking part in 'no sessions' whatsoever (35% Vs 5.1%). More participants from lower SES reported 'one session' than those from higher SES (29.6% and 11.4% respectively). More participants from higher SES than those participants from lower SES reported 'two sessions' (15.2% and 13% respectively), 'three sessions' (20.3% and 7.4% respectively), and 'more than three sessions' (48.1% and 18.5% respectively).

There were no significant differences between frequency of overall weekly club activity sessions and gender $\chi^2(4) = .556$, $p > .05$. Boys (n=64) and girls (n=69) reported similar levels of participation for all the frequency groupings. More specifically, boys reported more 'no sessions' than girls (17.2% and 14.5% respectively). Girls reported higher participation than boys in 'one session' (20.3% and 17.2% respectively). Boys reported higher participation than girls in 'two sessions' (15.6% and 13% respectively). Girls reported higher participation than boys in 'three sessions' (15.9% and 14.1% respectively) and 'more than three sessions' (36.2% and 35.9% respectively).

Table 3.1a Overall club activity sessions (combined school and out-of-school club activities sessions)

Reported frequency of weekly club activity sessions	Total participants	Participants by gender		Participants by SES	
		boys	girls	low	high
No sessions	21(15.7%)	11(17.2%)	10(14.5%)	17(31.5%)	4(5.1%)
One	25(18.8%)	11(17.2%)	14(20.3%)	16(29.6%)	9(11.4%)
Two	19(14.3%)	10(15.6%)	9(13%)	7(13%)	12(15.2%)
Three	20(15%)	9(14.1%)	11(15.9%)	4(7.4%)	16(20.3%)
More than three	48(36.1%)	23(35.9%)	25(36.2%)	10(18.5%)	38(48.1%)
Total participants	133	64	69	54	79

Note. Pupils reporting more than one weekly club activity session might represent them as participating in: (1) different clubs (e.g., 1 x football + 1 x basketball = total of 2 sessions per week), or (2) the same clubs on more than one occasion each week (e.g., 3 x football = total of 3 sessions per week), or 3) a combination of both (e.g., 1 x football + 2 x basketball = total of 3 sessions per week).

School club activity sessions. Table 3.1b shows that out of a total of 133 participants, 47.4% reported 'no sessions,' 23.3% reported 'one session,' 6.8% reported 'two sessions,' 6% reported 'three sessions,' and 16.5% reported 'more than three sessions.' There were significant differences between frequency of school weekly club activity sessions and SES $\chi^2(4) = 17.53$, $p < .001$. Although school club activity participation between SES groups was generally less variable than for the overall club activity reported above, the biggest difference was apparent in young people who reported taking part in 'more than three' weekly school club sessions. Less than 2% of lower SES (n=54) young people compared to 26.6% of higher SES (n=79) children participated to this extent. More specifically, the results indicate that those participants from lower SES reported more 'no sessions' than participants from higher SES (50% and 45.6% respectively). More participants from lower SES than those from higher SES reported 'one session' (29.6% and 19% respectively), 'two sessions' (7.4% and 6.3% respectively), and 'three sessions' (11.1% and 2.5% respectively). More participants from higher SES than lower SES reported taking part in 'more than three *sessions'* (26.6% and 1.9% res*p*ectively).

Although there were no significant differences between frequency of school weekly club activity sessions and gender $\chi^2(4) = 7.19$, $p > .05$, boys (n = 64) appeared to participate in more club sessions than girls (n = 69) for most of the frequency groupings (one, two, and three sessions). However, girls reported taking part in 'more than three' club sessions than boys (20.3% Vs 12.5%). Just under half (47.4%) of the

participants appeared to not take part in any weekly school club activity sessions whatsoever, and was reported by more girls than boys (53% Vs 40.6%), but similar for SES. Specifically, more girls than boys reported 'no sessions' (53.6% and 40.6% respectively). Boys reported higher participation than girls in 'one session' (28.1% and 18.8% respectively), 'two sessions' (9.4% and 4.3% respectively), and three sessions (9.4% and 2.9% respectively). Girls reported higher participation than boys for 'more than three sessions' (20.3% and 12.5%).

Table 3.1b School club activity sessions

Reported frequency of weekly club activity sessions	Total participants	Participants by gender		Participants by SES	
		boys	girls	low	high
No sessions	63(47.4%)	26(40.6%)	37(53.6%)	27(50%)	36(45.6%)
One	31(23.3%)	18(28.1%)	13(18.8%)	16(29.6%)	15(19%)
Two	9(6.8%)	6(9.4%)	3(4.3%)	4(7.4%)	5(6.3%)
Three	8(6%)	6(9.4%)	2(2.9%)	6(11.1%)	2(2.5%)
More than three	22(16.5%)	8(12.5%)	14(20.3%)	1(1.9%)	21(26.6%)
Total participants	133	64	69	54	79

Note. Pupils reporting more than one weekly club activity session might represent them as participating in: (1) different clubs (e.g., 1 x football + 1 x basketball = total of 2 sessions per week), or (2) the same clubs on more than one occasion each week (e.g., 3 x football = total of 3 sessions per week), or 3) a combination of both (e.g., 1 x football + 2 x basketball = total of 3 sessions per week).

Out-of-school club activity sessions. Table 3.1c shows that out of a total of 133 participants, 34.6% reported 'no sessions,' 24.1% reported 'one session' 13.5 % reported 'two sessions,' 15% reported 'three sessions,' and 12.8% reported 'more than three sessions. There were significant differences between frequency of out-of-school weekly club activity sessions and SES $\chi^2(4) = 17.76$, $p < .001$. Participants from higher SES (n = 79) seem to take part in more out-of-school club sessions for all of the frequency groupings than those from lower SES (n = 54) (78.5% of higher SES and 46.3% of lower SES participate in one or more out-of-school clubs per week), and that this gap is especially evident for those reporting 'three or more' sessions (19% Vs 3.7%). Specifically, the results indicate that those participants from lower SES reported more 'no sessions' than participants from higher SES (53.7% and 21.5% respectively). More participants from higher SES than lower SES reported, 'one

session' (25.3% and 22.2% respectively), 'two sessions' (16.5% and 9.3% respectively), 'three sessions' (17.7% and 11.1%), and 'more than three sessions' (19% and 3.7% respectively).

There were no significant differences between frequency of out-of-school weekly club activity sessions and gender $\chi^2(4) = 1.77$, $p > .05$. Although the weekly club sessions appeared to be similar, girls ($n = 69$) reported more sessions for most of the frequency groupings (two, three, and more than three) than boys ($n = 64$). Just over one third (34.6%) reported not taking part in any sessions whatsoever and was highest for those from lower SES backgrounds with more than half not taking part (53.7%). Specifically, the results indicate that more boys than girls reported 'no sessions' (37.5% and 31.9% respectively). Boys reported higher participation than girls in 'one session' (26.6% and 21.7% respectively). Girls reported higher participation in 'two sessions' (15.9% and 10.9% respectively), 'three sessions' (17.4% and 12.5% respectively), and 'more than three sessions' (13% and 12.5% respectively).

Table 3.1c Out-of-school club activity sessions

Reported frequency of weekly club activity sessions	Total participants	Participants by gender		Participants by SES	
		boys	girls	low	high
No sessions	46(34.6%)	24(37.5%)	22(31.9%)	29(53.7%)	17(21.5%)
One	32(24.1%)	17(26.6%)	15(21.7%)	12(22.2%)	20(25.3%)
Two	18(13.5%)	7(10.9%)	11(15.9%)	5(9.3%)	13(16.5%)
Three	20(15%)	8(12.5%)	12(17.4%)	6(11.1%)	14(17.7%)
More than three	17(12.8%)	8(12.5%)	9(13%)	2(3.7%)	15(19%)
Total participants	133	64	69	54	79

Note. Pupils reporting more than one weekly club activity session might represent them as participating in: (1) different clubs (e.g., 1 x football + 1 x basketball = total of 2 sessions per week), or (2) the same clubs on more than one occasion each week (e.g., 3 x football = total of 3 sessions per week), or (3) a combination of both (e.g., 1 x football + 2 x basketball = total of 3 sessions per week).

Difference in Frequency of Weekly Club Activity Sessions and Associated Psychological Factors

Weekly club activity sessions. Table 3.2 shows the differences in frequency of weekly activity between the groups and addresses question one. Significant SES differences were found for overall club activity sessions ($F[1, 129] = .23.511$, $p = .000$, partial $\eta^2 = .154$, large effect), school club activity sessions ($F[1, 129] = 7.609$, $p = .007$, partial η^2

= .056, medium effect) and out-of-school club activity sessions (F[1, 129] = 14.944, p = .000, partial η^2 = .104, large effect) with those from higher SES reporting more weekly sessions than those from lower SES. Medium effects are shown for school club activity sessions, and large effects for overall club activity sessions and out-of-school club activity sessions. There were no significant differences or no effect sizes for gender.

Motivational factors. Table 3.2 shows the differences in psychological factors and addresses question two. Significant SES differences were found for self-determination (F[1,129] = .11.179, p = .001, partial η^2 = .080, medium effect) with those from higher SES more self-determined than those from lower SES. A small effect was shown for perceived competence (F[1,129] = 1.696, p = .195, partial η^2 = .013, small effect). There were no significant differences for gender although a small effect size was found for perceived competence (F[1,129] = 2.170, p = .143, partial η^2 = .017, small effect).

Table 3.2 Mean sources for participants weekly club activity sessions and motivational factors by gender and SES

	OCAS	SCAS	OSCAS	IM	PC	SD
Gender	N = 133	N = 133	N = 133	N = 133	N = 133	N = 133
Boys	2.77	1.31	1.45	3.50	3.69	3.74
Girls	3.25	1.47	1.76	3.49	3.51	3.81
F value	0.134	0.002	0.218	0.167	2.170	0.019
Effect size[a]	0.001	0.000	0.002	0.001	0.017	0.000
SES	N = 133	N = 133	N = 133	N = 133	N = 133	N = 133
Low	1.76	0.85	0.91	3.46	3.52	3.54
High	**3.87***	**1.77***	**2.10***	3.51	3.65	**3.94***
F value	23.511	7.609	14.944	0.335	1.696	11.179
Effect size[a]	0.154	0.056	0.104	0.003	0.013	0.080

Note. SES = Socioeconomic Status, OCAS = Overall (SCAS + OSCAS) Club Activity Sessions, SCAS = School Club Activity Sessions, OSCAS = Out-of-School Activity Sessions, IM = Intrinsic Motivation, PC = Perceived Competence, SD = Self-Determination, * = significant difference at the p < .05 level, a = η2.

Associations Between Gender, SES, Frequency of Weekly Club Activity Sessions and Motivational Factors

Significant correlations were found between the participant's characteristics and frequency of weekly club activity sessions (see Table 3.3). Correlation analysis demonstrated that SES had a positive medium association with overall weekly club

activity sessions (r = .400) and out-of-school weekly activity sessions (r = .331), and a small positive association with school weekly club activity sessions (r = .239). Intrinsic motivation had small positive associations with overall weekly activity sessions (r = .265) and out-of-school weekly activity sessions (r = .286). Perceived competence had medium associations with overall weekly club activity sessions (r = .362) and out-of-school weekly activity sessions (r = .333), and a small association with school weekly club activity sessions (r = .185). Self-determination had medium associations with overall club activity sessions (r = .377) and out-of-school activity sessions (r = .355), and a small association with school club activity sessions (r = .184).

For motivational factors and SES and Gender, there was a significant correlation found between SES and self-determination (r = .287).

Table 3.3 Pearson's correlations for main study variables

	OCAS	SCAS	OSCAS	Gender	SES	IM	PC
Gender	.093	.044	.089				
SES	.400*	.239*	.331*	.154			
IM	.265*	.096	.286*	-.009	.046		
PC	.362*	.185*	.333*	-.123	.094	.298*	
SD	.377*	.184*	.355*	.055	.287*	.342*	.571*

Note. SES = Socioeconomic Status, TCAS = Overall (SCAS + OSCAS) Club Activity Sessions, SCAS = School Club Activity Sessions, OSCAS = Out-of-School Activity Sessions, IM = Intrinsic Motivation, PC = Perceived Competence, SD = Self-Determination, * = significant difference at the $p < .05$ level.

Predictors of Weekly Club Activity Sessions

Multiple linear regression (see Table 3.4) was used to help determine the predictive ability of gender, SES, and the psychological factors (IM, PC, and SD) on the three groups of frequencies of weekly club activity sessions (question three). The models predicted between 5% and 27% variance of weekly club activity sessions. SES was found to be a more powerful predictor than any of the psychological factors for all three models, while gender was not predictive. SES was the sole predictor of school club activity sessions, but for out-of-school club activity sessions psychological factors added predictive value to the model. Specifically, the first regression model statistically significantly predicted overall club activity sessions ($F[5, 127] = 10.931$, $p < .001$, adj.

R2 =.27) where SES and perceived competence added statistical significance to the prediction. The second regression model statistically significantly predicted school club activity sessions (*F[5, 127] = 2.411, p* < .05, adj. R2 =.05) where the single statistical significant predictor was SES. And finally, the third regression model statistically significantly predicted out-of-school club activity sessions (*F[5, 127] = 8.390, p* < .001, adj. R2 =.22) where SES, intrinsic motivation, and perceived competence added statistical significance to the prediction (regression coefficients and standard errors are presented in Table 3.4).

Table 3.4 Results from the multiple regression analysis predicting frequency of weekly club activity sessions

Predictor	B	SE_B	β
Total club activity sessions			
Intercept	-7.091	1.580	
SES	1.772	.415	.336*
Perceived competence	.897	.339	.246*
In-school club activity sessions			
Intercept	-2.097	1.315	
SES	.815	.345	.212*
Out-of-school club activity sessions			
Intercept	-4.995	1.120	
SES	.957	.294	.265*
Intrinsic motivation	.549	.253	.180*
Perceived competence	.521	.240	.209*

Note. * = statistical significance at $p < .05$; B = unstandardized regression coefficient; SE_B = standard error of coefficient; β = standardized coefficient.

Discussion

The purpose of this study was to investigate the weekly club activity sessions and motivational factors in a sample of young people within a Scottish context. Specifically, the present study asked the following three questions: 1) Are there differences in the amounts of weekly activities in young people by gender and SES? 2) Are there differences in the motivational factors IM, PC, and SD by gender and SES? and 3) which characteristics (gender, SES, IM, PC, and SD) are the most important predictors of weekly club activities?

SES was found to be the most positive predictor of young people's participation in overall club activities, school club activities and out-of-school club activities. Young people from higher SES backgrounds participated in more weekly club activity sessions than those from lower SES backgrounds. This finding is aligned with existing research that shows that young people from affluent families are more likely to participate in structured activities such as club activities than those from less affluent families (Mota, Gomes, Almeida, Ribeiro, & Santos, 2007; Tammelin et al., 2003).

More specifically, the present study showed that over half (53.7%) of young people from lower SES backgrounds (compared to 21.5% from higher SES) did not participate in any out-of-school clubs, whatsoever. For school club participation, rates of non-participation were similar between the SES groups (50% for lower SES and 45.6% for higher SES). Research has shown that parents from low SES backgrounds are unable to afford the associated logistical, financial burden associated with sports club activities such as subscriptions, clothing, equipment, and transport (Mota, 2005; Vandermeerschen & Scheerder, 2015). This restriction may be exaggerated in out-of-school clubs where the logistics and costs might be more challenging. For general PA, studies have suggested that children from low SES participate in less PA, have higher BMI, and are more at risk of serious health issues than those from high SES (Drenowatz et al., 2010). However, some studies have suggested that those from low SES are more likely to participate in walking than those from high SES (Ogilvie et al., 2008). An important point to note is that because SES is viewed and assessed in different ways (e.g., by income, the number of parents, or occupation of parents, or the fathers' occupation only) the data on SES is often unclear and variable Biddle et al. (2011).

While studies highlight that low SES can be a restricting factor for young people's club activities (Mota et al., 2007; Vandermeerschen & Scheerder, 2015), what remains unclear is the potential impact limited participation can have on individual key attributes or characteristics needed to participate in club activities. The current study demonstrated that motivation is important, and perhaps unsurprisingly, that young people from higher SES backgrounds were more self-determined (or had higher levels of perceived choice) to participate in club activities than those from lower SES backgrounds. This finding supports existing research (e.g., for the SDT tenets) which shows that autonomous motivations is more positively related to participation in club-based activities than controlled motivation (Gillet, Vallerand, Amoura, & Baldes, 2010; Owen et al., 2014). However, the effects observed for motivation in the present study

were only moderate in size, thereby, suggesting that other influences not explored in the present study, but evidenced within the present thesis literature review, stand as important correlates of young people's club activity participation (e.g., neighbourhood safety, Lämmle et al., 2012).

While SES was the main predictor of out-of-school and in-school club activity, in the out-of-school club context perceived competence and intrinsic motivation were also significant predictors. This finding might suggest that young people participate in out-of-school activity only when they think they are good enough and have a sense of enjoyment (Deci & Ryan, 1985). Research supports this (e.g., Sollerhed, Apitzsch, Rastam, & Ejlertsson, 2008) and has shown, for example, that in many cases girls have lower perceived competence than boys particularly in adolescence, meaning this group may be at risk of lower participation in out-of-school clubs (Craft et al., 2003; Davison et al., 2010; Sportscotland, 2006). In this study, there were no significant gender differences in either perceived competence, intrinsic motivation or frequency of weekly out-of-school club activity. However, lower SES participants participated significantly less in club activity, but they did not differ in relation to perceived competence or intrinsic motivation. These results highlight that while motivational factors appear to play a role in shaping young people's beliefs and behaviours towards club-based activities (Hagger & Chatzisarantis, 2007; Ryan & Deci, 2002), it is crucial to consider a wider array of contextual factors when trying to understand club activity participation.

For gender, the results show no differences between the frequency of boys and girls school club activities and out-of-school club activities. This finding contradicts much of the research suggesting boys are more active in organised club-based activities than girls (Clark, 2008; Vilhjalmsson & Kristjansdottir, 2003). Toftegaard-Støckel, Nielson, Ibsen, and Anderson (2011) reported that girls were half as likely to take part in sports as boys. Other research in Scotland has demonstrated that boys take part in more organised activities than girls (Biddle et al., 2005; The Scottish Sports Council, 1999). A recent longitudinal study of Australian children looking at the predictors of participation in organised activities in childhood found that boys were more likely than girls to participate (Vella, Cliff, & Okely, 2014).

However, studies have suggested that the 'gender gap has closed.' For example, the Sports Council for Wales (2009) reported only small differences between secondary aged boys' and girls' participation in extracurricular sports. Other studies have demonstrated that as children age their levels of participation in organised and

unorganised activities do not differ by gender (García Bengoechea, Sabiston, Ahmed, & Farnoush, 2010; Guèvremont, Findlay, & Kohen, 2008). More recently, the 2015 Scottish Health Survey (SHS, The Scottish Government 2016) suggested that there were no statistical significant differences between boys (69%) and girls (66%) participation in sports.

This disparity of participation highlighted in the research may be linked to reporting of the participants. For example, many studies are cross-sectional and report on young people either attending primary or secondary school, or at specific age ranges. Other studies have suggested the transition from primary to secondary is a challenging period for young people, and as such is associated with negative PA (including sports participation) outcomes (Biddle et al., 2004; Kjonniksen, Torsheim, & Wold, 2008; Sallis & Owen, 1999).

An important point to highlight is that while the present study demonstrates that there are similarities in the frequencies between boys' and girls' weekly club activity sessions (suggesting the 'gender gap is closed'), it is possible that this is related to boys participating in fewer sports sessions, and not that girls are participating in more sessions. However, this finding that boys participate in fewer sports is difficult to evidence because studies such as the 2015 SHS (The Scottish Government, 2016) only reported on sports participation from 2008, although, have shown that participation since then have declined for boys (71% in 2008; 66% in 2012; 68% in 2015). Nevertheless, this similarity in participation levels in club activity session in the present study is potentially a cause for concern, particularly since the research continues to suggest that levels of PA in young people are showing no signs of improvement (Bromley et al., 2013; Currie et al., 2015).

Limitations

A limitation of this present study was with the associated practical realities in sampling. Specifically, there were restrictions associated with 'time' and 'access' to participants, which together restricted the size of the samples (VanVoorhis & Morgan, 2007, p. 43). These restrictions meant that the total number of participants (n=133) was less than the original estimates of over 300. This reduced number of participants had implications on the study analysis. For example, while there were sufficient numbers to statistically test for main effects, the interactions between gender and SES on club activity sessions was not performed due to low cell numbers. Nevertheless, even though the sample in the

present study was lower than the provisional estimate, there were still sufficient numbers of participants to perform the statistical analysis carried out (VanVoorhis & Morgan, 2007). While larger samples would have more accurately represented the characteristics of the population used, due to the logistical limitations highlighted, this was not possible.

The consequence of reduced sample size in the present study led to increasing the power and decreasing the estimation error (i.e., incurring a Type 1 error) (Cronbach, Gleser, Nanda, & Rajaratnam, 1972). To offset this limitation to do with sample size, the dependent variable measures (e.g., psychological variables) were checked and made to be as reliable as possible (Wilson & Morgan, 2007). In achieving this, Cronbach's alpha was used to test the internal reliability of measures for three psychological factors used in this study (IM, PC, SD), which, were found to be within the acceptable range of between .75 and .83 (Tavakol & Dennick, 2011). This also strengthened the theoretical underpinnings of the work to focus specifically on SDT. There was also consideration given to explore the interaction effects between gender and SES on the frequency of weekly club activities, and the psychological factors. However, sampling was found to be an issue whereby the numbers of females from lower SES (n = 23) fell short of the recommended amount required (n = 30, participants per cell) to yield the minimum suggested statistical power (Cohen, 1988). This shortfall in numbers of female participants would have increased the likelihood of a Type I error occurring by not having the adequate power to perform this statistical analysis (Cronbach et al., 1972). Therefore, the interaction effect between gender and SES was not carried out.

A second limitation that may be associated with greater measurement error in the present study, was the lack of competence that some of the children had in completing the questionnaires (particularly the psychological questionnaires). This was reported by the teachers who informed the lead researcher that some of the children struggled to understand some of the questions asked (Sirard & Pate, 2001), and so they helped the children to complete the questionnaire (also a limitation, Bervoets et al., 2014). These same teachers explained that this was because these children struggled with general reading and writing and were not up to the standards perhaps expected of their age. This may have been improved by introducing different strategies in which to gather data. For example, participants being read the questions, rewording items, using pictures, or perhaps additional time to ensure that the children having difficulties are better provided for.

Another limitation of the present study was the use of two items to assess only the frequency of weekly club sessions. While this may be adequate for investigating the frequency of club activity sessions in a mostly sports context (although, it is important to note that there is no evidence of validity and reliability), these items lacked the scope to capture the complex nature of PA because they were too narrowly focused (i.e., only club activities). Besides organised club based activities, PA comprises of less organised activities such as walking and running, playing with friends at the park, or even just playing in the street or garden at home. This is an important disparity to address, particularly when unorganised activities represent an ideal PA (minus the cost of e.g., transports and subscription) opportunity for young people (Activity Healthy Kids Canada, 2008). For example, the findings reported by the U.S. National study of Adolescent Health demonstrated that young people participating in wheel-related PA four times per week (e.g., roller-skating, rollerblading, bicycling, and skateboarding) reduced the likelihood of them becoming obese (i.e., by 48%) in adulthood (Menshik, Ahmed, Alexander, & Blum, 2008).

Also, the measurement of not just types and frequency, but also the duration and intensity of PA are also vital factors in determining the benefits to health through achieving minimum recommended PA guidelines (Strong et al., 1995). This was a limitation in the present study, which had this been included, would have provided further insight into the nature of PA in young people, albeit, in a club based activity context only.

As with other research, a limitation of this study was that it was cross-sectional in design, therefore, further assessment of SDT tenets in experimental and longitudinal studies is necessary. Further, this study did not investigate the inter-relationships between PA, motivation, and the three basic psychological needs. The satisfaction of the basic psychological needs (relatedness, autonomy and competence) predicts self-determined motivation (Ryan & Deci, 2000), thus more work looking at the influence of needs satisfaction is necessary. Also, examination of the social factors influencing young people's needs satisfaction (e.g., teacher, coaches, peers, and parents) and PA are necessary.

Finally, this study adopted self-report questionnaires, which, in common with other subjective measures of this nature, its design is limited by an individual's PA previous experiences (e.g., seven-day recall). These types of subjective measures are considered less than favourable regarding the accuracy of measurement, especially

when working with child participants who are more likely to struggle with memory recall due to lower cognitive function compared to adults (Sirard & Pate, 2001). This is an important consideration for future investigations.

Reflective Commentary

Background to this Study, and the Emergent Thesis

This reflective commentary is designed to provide insight into why I chose to investigate only sports activities during the early stages of my thesis (study one), and how during my research journey, my investigations led to a more broad and comprehensive consideration of young people's PA. To help me achieve this, and to help me think more systematically about my research journey, I adopted aspects of 'Gibbs reflective cycle' (Gibbs, 1988).

My reason for embarking on this research journey was influenced mostly by my son (Ben – then aged, 9). At the time (during the year of 2009), I was concerned that Ben was disengaging from taking part in the sport-based club activities during in, and out-of-school. This concern led to a meeting with an associate (sports psychologist and subsequently my research supervisor) to help me better understand the likely reasons responsible for Ben's disengagement, and the possibility that Ben would re-engage in sport. The result of this meeting led me to change the way I approached parenting and supporting my son in his activity choices, particularly through increased understanding of SDT. This further sparked my interest, and I enrolled onto a postgraduate research programme with the aim of finding out more (date of enrolment was September 2010). The primary research aim at the time was to explore young people's participation in sports-based activities, and to examine the potential underlying psychological reasons responsible from a SDT perspective.

This study adopted a quantitatively based approach. Self-report measures were used to assess the frequency of young people's participation in club-based activities and some of the important motivational factors influencing participation. While the results of this study provided some insight into young people's club activity sessions and their motivations to participate, it was limited to investigating structured club and sport orientated activities only. Also, the Young People's Physical Activity Questionnaire (used to assess club activity participation) used in this study had no evidence of its reliability or validity, which, is essential for the accurate assessment of PA (Dollman et al., 2009; Tremblay, 2014). These limitations became more apparent through further

reading of the relevant literature throughout the first year of my postgraduate research programme. For example, the literature suggested that as well as low levels and declines in structured sport club participation, there were concerns with unstructured types of PA such as playing, walking, and running (e.g., Inchley et al., 2008).

A point to note is that throughout my research journey, I have grown to understand how extremely important it is to take a critical approach to the definition and measurement of PA and MVPA. For example, as outlined by the behavioural epidemiological framework (Sallis & Owen, 1999; cited in Biddle & Mutrie, 2008), researchers must find ways of measuring PA in more valid and reliable ways, while also using robust and standardised measures to ensure that our understanding, measurement, and monitoring of PA can accurately inform policy and practice (Tremblay, 2014).

Aligned with this, and from continued searching through the literature, and from the research progress meetings (point to note: resulting from the first-year study progress board, it was agreed that I progress onto the PhD programme carrying over my work from the first year of the postgraduate research programme), I realised that it was crucial that PA should be investigated more broadly, rather than just by structured club activity. Furthermore, the complexity of PA and associated correlates across the lifespan of young people, influenced my decision to take a qualitative approach for studies two and three.

How Would I Do this Study Differently?

Although study one provided useful information pertaining to frequency of club activities and motivational influences in young people by SES and gender, there were clear limitations. In retrospect, I would have carried out this study differently. Through the process of my research journey and education, I realised that by carrying out a more thorough review of the relevant literature associated with the nature of PA in young people (rather than just club sports-based activities), would have helped to provide additional and important information prior to commencement of the study (this has now been carried out, chapter two, pp. 7-55). For example, the literature revealed that the accurate measurement of PA is essential for research and practice in determining health outcomes (positive and negative), monitoring population prevalence and trends (including sub-populations and high-risk groups), assessing the determinants and correlates, and monitoring and testing intervention strategies (Dollman et al., 2009; Tremblay, 2014).

For future studies of this nature, I would want to recruit a larger and more representative Scottish sample. Also, I would use, for example, a cross-sectional approach employing the Physical Activity Questionnaire for Adolescents (PAQ-A). This questionnaire is frequently used to assess children's PA (Inchley, Kirby, & Currie, 2008) and designed to be relatively quick to complete (<20 minutes), easy to understand, reduction on staff burden, and inexpensive (Kowalski, Crocker, & Faulkner, 1997). Also, this questionnaire is valid and a reliable subjective measure (Biddle et al., 2011; Bervoets et al., 2014). Alternatively, or in addition, I would gather PA data by asking participants to, for example, wear an ACTi Graph (e.g., Pensacola, FL) accelerometer (Sebire, Jago, Fox, Edwards, & Thompson, 2013).

For motivation (study one), the key factors explored provided useful information concerning participants' motivation in a club activity PA context only (Deci & Ryan, 1985). However, motivation is an important motivational correlate and determinant of PA (Ng et al., 2012). If doing this again, I would further explore the different types of motivation underpinning PA, specifically the relationship between young people's behavioural regulations and their participation. For example, the differences between young people's autonomous (i.e., intrinsic motivation, integrated regulation and identified regulation) and controlled (i.e., external regulation, introjected regulation) forms of motivation (Deci & Ryan, 1985). To assess motivation, I would use the adapted Behavioural Regulations in Exercise Questionnaire for PA (Sebire et al., 2013). This scale is consistent with theoretical definitions and has demonstrated good psychometric properties in adolescents (Gillison, Standage, & Skevington, 2006).

For the analysis (provided sufficient numbers of participants), I would use confirmatory factor analysis to examine the construct validity of adapted behavioural regulation and psychological needs scales, and structural equation modelling to test cross-sectional associations between psychological needs satisfaction, motivation types and PA assessed by accelerometers (Sebire et al., 2013). Also, multiple analysis of variance (MANOVA) would be used to examine whether resulting profiles differed in motivations and effort in PA (Cox, French, & Sabiston, 2013).

CHAPTER FOUR- Research Methods

Introduction

There are many different views of what reality (ontology) and the nature of knowledge (epistemology) regarding human beings and the environment in which they exist (Holloway, 2005). It is thought that variation and types of knowledge are collected in several ways and that researchers, depending on the nature of their intended work, will make decisions based on how, when and which research methodology best fits their intended investigation. Throughout the process of this thesis, the researcher considered closely the statement by Erlandson, Harris, Skipper, and Allen (1993) below, which focussed the research towards understanding the holistic picture of physical activity (PA) in young people.

> The problem statement in naturalistic research is not a question or even an objective, but rather… an expression of a dilemma or situation that needs to be addressed for the purpose of understanding and direction. The purpose of a research enquiry is to… construct meaning towards that end (p. 49).

This chapter sets out to explain the logic, rationale and validity in using mixed methods (quantitative and qualitative research design) studies in this thesis. To begin with, the research paradigms are considered specifically, the positivist or quantitative research, and the naturalistic or qualitative approaches (explanations are provided for the application of specific paradigms in the present thesis). The position of mixed methods (quantitative and qualitative) is discussed as a research design along with a summary of its application within the present thesis.

The Paradigms

Ontology and epistemology have been directed in part by two paradigms. First, positivism - considered to be reductionist in nature and second and naturalistic (e.g., constructivist) inquiry - considered to facilitate ‘overall perspective’ (Lincoln & Guba, 1985, p. 8). Positivism is normally viewed as being objective and is known through measurement and or observation. The positivist perspective maintains subjectivity can be controlled through methodology and consequently, research remains unbiased. Table 4.1 shows some of the main characteristics outlining both paradigms.

Table 4.1 The main characteristics of key research paradigms

Positivist	Constructivist
Deductive	Inductive
Reliability, validity	Trustworthiness, credibility
Generalizable, replicable	Context specific
Linear process	Nin-linear, responsive
Hypothesis testing	Revealing subjective experiences
Causal relationships	Makes sense of actions
Research as value free	Research is subjective
Research produces knowledge	Researcher and participants co-produce knowledge

Note: Taken from: Giacobbi, Poczwardowski, and Hager, 2005; Lincoln and Guba, 2000; Silverman, 2010; Robson, 2011).

Quantitative research is derived from this paradigm and the process is normally deductive (DePoy & Gitlin, 1998) and means researchers using this paradigm pull information from existing theory, from which to validate or study, before their investigation starts. This approach to research (i.e., guiding data collection) does by the very nature of the deductive process, encourage the positivist researcher to overlook the participant's perspective, therefore, vital information can be overlooked and lost. In contrast however, the naturalistic (or qualitative) inquiry approach assumes people as having a range of personal experiences pertaining to issues, therefore, they must have the greater knowledge. So, naturalistic inquiry incorporates an inductive form of thinking where theory can emerge not from pre-existing theory or knowledge. Thus, the inductive researcher begins their study with data collection (DePoy & Gitlin, 1998) uninhibited from previous information or theory (This is particularly salient concerning the present investigations because, for example, findings from study one only offered a narrow and partial understanding of the phenomena).

Considering this, and congruent with a qualitative approach to research, it was appropriate to incorporate an inductive line of inquiry into the present thesis. It was anticipated that by using this naturalist approach would then allow participants to express their own understandings of their experiences of PA. For example, how their social context influences the kinds of activity they participate in, and to reveal the less obvious kinds of activity that may be overlooked in conventional style questions about

PA. Something offering a more emergent and less rigid methodology when collecting data, allowing the researcher the freedom to probe different areas and ideas and with the flexibility to move back and forth through different quantitative and qualitative data sets and analytical directions. For this reason, the researcher chose to draw from a contemporary form of naturalistic enquiry following an evolved grounded theory approach described by Charmaz (2006) as constructivist grounded theory.

Also, the inclusion of a qualitative research approach in the present thesis aligned with that of a more pragmatic approach in addressing the pertinent research issues (Giacobbi et al., 2005). Pragmatists gauge research findings on their social, practical and moral consequences as well as the human situation. The problems under investigation along with the research question are considered by pragmatists as far more important than the underlying assumptions of the method. As such, the pragmatist will employ a suitable number of methods (i.e., through several studies) thought to be appropriate to a research question, while at the same time considering the potential outcomes of such an inquiry (Cherryholmes, 1992). The pragmatist line of investigation is less concerned about which account of the truth is better than another, and more focused on the practical issues surrounding human existence, the research question, and the consequences of the study to find out the relevant information (James, 1907). According to Creswell (2003), the pragmatist will use a variety of research approaches in which to further inform the problem under investigation. These approaches termed 'mixed methods,' are mostly used by pragmatists within a single study or a programme of several studies. Hall and Howard (2008, p. 250) innovatively promote mixed methods as a 'synergistic approach' in which 'two or more options interact so that their combined effect is greater than the sum of the individual parts.' Their basic premise being that the combined qualitative and quantitative techniques provide a greater effect together than either approach on their own. Howe and Eisenhart (1990) support the pragmatist position suggesting that investigators should continue their investigation 'with whatever works' believing that the quantitative and qualitative debates obstruct the research in important areas. What follows next is an outline of mixed methods with a rationale for the use of qualitative and quantitative paradigms including a description of those inquiries and their implementation within the present thesis.

Mixed Methods

The term ‘mixed methods’ often refers to an evolving research methodology that expands the systematic integration (or combination) of quantitative and qualitative data within a single investigation or continuous programme of inquiry (Silverman, 2010). Previously, researchers were concerned that by using a mixed methods approach might create a situation where both paradigms were not valued equally thus placing one methodology over the other (Haase & Myers, 1988). However, Haase and Myers (1988) also accepted that the results from using a mixed methods design could be complementary; therefore, paradigm assumptions reconciled and paradigms integrated leading to the effective merging of methods.

The fundamental idea of this methodology is that the combination or overlap of the data enables a more thorough and synergistic utilisation of the data compared to just quantitative and qualitative data collection and analysis alone (Creswell & Plano Clark, 2011; Hall & Howard, 2008). The mixed methods approach is frequently used in health science research, the purpose of which is to gain a better understanding of the research problem (Ivankova, Creswell, & Stick, 2006). Mixed methods can include a blend of two or more data collection techniques and types of analysis (quantitative and qualitative) which contribute to the results of a programme of work (Creswell, 2014; Tashakkori & Teddlie, 1998). These methods are mostly used concurrently or sequentially, however, as pointed out by Creswell (2009) mixed methods design is mostly varied and liable to change over time. Designs set the way in which quantitative and qualitative methods are brought together in a single study or a series of studies and provide a pragmatic approach towards choosing appropriate methods to best answer the research question (Onwuegbuzie & Leech, 2005). Creswell (2014) describes some examples of the procedures for the development of mixed methods designs as:

- Ways to integrate the quantitative and qualitative data, such as one database, could be used to check the accuracy (validity) of the other data base.
- One database could help explain the other database, and one database could explore different types of questions than the other database.
- One database could lead to better instruments when instruments are not well-suited for a sample or population.
- One database could build on other databases, and one database could alternate with another database back and forth during a longitudinal

study (p. 15).

In line with Creswell (2014) specifically the second example shown above, and the more pragmatic approach outlined by Giacobbi et al. (2005), the present thesis used a multilevel sequential mixed methods approach, comprising of three studies including one quantitative and two qualitative. This approach is consistent with other research (e.g., Onwuegbuzie & Leech, 2005) and as stated by Giacobbi et al., (2005; p. 26), multilevel 'approaches can be used simultaneously or sequentially' for mixed methods research.

While for some investigations mixed methods will use the same sample of participants for the overall study, the present thesis uses a different sample for each of the phases or studies (mixed methods can include two or more studies, Tashakkori & Teddlie, 1998). For example, the quantitative study (study one) used young people from several schools and socio-economic status (SES) backgrounds. The subsequent qualitative inquiries used older adolescents from one low SES school (study two) and qualified Scottish PE teachers currently working at one university (study three). Both investigations are appropriate for carrying out mixed methods design studies (Creswell, 2014; Giacobbi et al., 2005). However, there is continuing debate over whether participants for the sample in one study (e.g. qualitative) should be the same in the other study (e.g., quantitative) and therefore questions the validity of the overall investigation (Creswell, 2014). Typically, researchers would argue that because mixed methods designs are used to compare data from one study with the data from another, then the more similar the databases are, the better the comparison (Bryman, 2006). The mixed methods approach used in the present thesis is described next.

Quantitative Research.

Study one was a quantitative research design. The findings provided insight into the frequency of weekly club activity sessions and three associated key motivational factors in young people, specifically the differences in gender and SES. The quantitative method also enabled the relative predictive value of SES, gender and motivation on PA participation to be calculated. Reflection on the findings in combination with previous literature, led the researcher to question other ways in which PA is investigated mainly in low SES, and the different types and context young people participate. For example, similar to other research, study one investigated frequency of club activities (e.g.,

organised club activities such as sport). However, research highlights the importance of considering a variety of unstructured (or unorganised) activities in different contexts (e.g., walking, running, and playing in the local neighbourhood) as contributing to recommended PA guidelines (Karsten, 2005). And although some studies have reported on unstructured PA, the context tends to focus on mostly active travel through walking to and from school, and active play (e.g., in the local park) (Currie et al., 2011; 2015; Inchley, Kirby, & Currie 2008). Consequently, there seems to be less information concerning young people's participation in these other unstructured activities and contexts such as walking and playing in local areas or neighbourhood locations (e.g., walking to the shops and playing in the streets). Therefore, it is important to explore more broadly the nature of PA in young people, considering the different physical experiences they are likely to have a multitude of types and contexts.

Also, when considering SES and PA in young people, the research in Scotland appears to be limited and therefore represents a research gap. Furthermore, it seems to be particularly important to focus on this population because they are at risk of unhealthy lifestyles (Drenowatz, et al., 2010). This is supported in study one that showed differences in PA and SES specifically, those from lower SES participated in less weekly club activities than those from higher SES backgrounds. In fact, SES was shown to be the strongest predictor of PA participation. Future research investigating PA in young people should distinguish across SES, specifically to examine the different types of activities performed in a variety of contexts, across the key development stages, as well as the motivations or influences on participation choices. By doing this would uncover a more holistic picture of the nature of PA in young people, therefore, improving reporting on their overall levels of participation (along with improved reporting on recommended guidelines), and any potential barriers associated with SES.

These findings show that more work is needed to further understand the complexities surrounding the nature of PA in young people. In this thesis, this was achieved through two studies using a qualitative research design. Punch, Marsh, Keaton, and Harden (2013) suggest that the main features of this line of enquiry enables researchers to:

> …explore a wide array of dimensions of the social world, including the texture and weave of everyday life, the understandings, experiences of our research participants, the ways that social processes, institutions, discourses or relationships work, and the meaning that they generate. We can do all this qualitatively by using methodologies that celebrate richness, depth, nuance,

> context, multi-dimensionality and complexity, rather than being embarrassed or inconvenienced by them (p. 117).

Qualitative Research

There are many variations in the term qualitative research and what it is. The following features are used to describe qualitative research (Mason, 2002):

- *Based on the interpretivist position* – Qualitative researchers are interested in exploring the ways in which participants interpret and experience the world around them.

- *Based on flexible methods of data collection* – Flexibility is central to qualitative research because there is a recognized need to be able to respond to context within which research is taking place. This means that highly structured, standardized methods are not considered suitable.

- *Focused on developing explanations that take into account the complexity of the social world and the lives of the participants in the research* – Detail and context are not seen as problems that may lead to unreliability – they are the very essence of the social world to be studied and of the qualitative methodology.

Following on from study one, two qualitative research design inquiries were carried out in this thesis (studies two and three). Both studies followed a similar research design (i.e., purposive sampling and semi-structured interviews) and which is explained in the next section.

Purposive Sampling

Purposeful sampling was used to improve the conditions (through homogeneity) of the study, which subsequently improved the quality of the data collected to inform the present thesis phenomenon of interest (Palinkas et al., 2015; Patton, 2002). This method of selecting information rich participants includes identifying and selecting individuals with the necessary knowledge and experience of the phenomenon of interest (Creswell & Plano Clark, 2011). Also, participants selected should have the ability to communicate their experiences and opinions in a reflective, expressive, and articulate way (Bernard, 2002).

Purposeful sampling was used in studies two and three in this thesis, and involved the identification and selection of the most appropriate participants (where possible) suitable to inform the phenomenon of interest (i.e., an investigation into the

nature of PA in young people). For example, for study two, although the participants met the initial criteria for the pilot study (i.e., attended the same college, were within the age limit criteria - aged 16 to 21, and were from low SES backgrounds) it soon emerged that their experiences were very different including the schools they had attended. For example, some participants had previously attended inner city schools in high and low SES catchment areas whereas others had attended suburban schools in different countries. On identifying these factors, participants for subsequent interviews were purposefully selected using the following selection criteria: Participants had to attend the same school from a low SES catchment area, be in the same year of school (i.e., secondary five or six) and be of school age but not less than 16 years. By doing this improved the quality of the study by ensuring that the participants had sufficient knowledge through cultural and environmental experiences. Also, as well as having knowledge and experience, all the participants needed to demonstrate a willingness to participate in the study and be competent enough to communicate their opinions and experiences in a reflective, expressive, and articulate way (Bernard 2002).

These similarities in the participants' cultural and environmental experiences emerged to be important factors for theoretical sampling techniques used in study two, where specific data was sought from the participants and used to fill and refine major categorisations within the study (Charmaz, 2006). Further information to do with the participant selection (e.g., theoretical sampling) is contained within the methods section for each of the studies two and three.

Interviews

Interviews in qualitative research inquiry are one of the most common methods used (Punch et al., 2013). An interview in research is essentially a directed conversation that facilitates a coordinated and focussed information exchange between interviewer and interviewee (Lofland & Lofland, 1995). Choosing the right interview technique is important for collecting the right information, which in research is achieved using the most effective nature of inquiry. For example, in grounded theory semi-structured interviews are an effective interview technique (Charmaz, 2006).

Interviews can be loosely structured around a set of key questions, centred on participant's life history and be based on very little pre-considered structure other than some relevant topics (Punch et al., 2013). Although interview techniques can vary (e.g., the extent to which the interview can be led by the interviewer or the participant)

there are features common to all qualitative interviews outlined by Punch et al., (2013, p, 118) as follows:

- *In depth* - Qualitative interviews are intended to look at the in-depth opinions and responses of interviewees, rather than the yes/no responses.

- *Interactive* – Kvale (1996: 2) noted that 'an interview is literally an *interview*, an interchange of views between two persons conversing about a theme of mutual interest.'

Semi-structured interviews were used in studies two three which by the very nature of its question design (i.e., open-ended questions) was an effective interview technique to gather rich and in-depth data (Charmaz, 2006). By using semi-structured interviews, the researcher could probe deeper into the areas of interest and explore the interviewee's subjective interpretation of previous events. Specifically, the events during childhood and adolescence, therefore, unpacking the complexities of PA. This is where self-report questionnaire style techniques are limited. Further, these open-ended questions were designed to be non-judgemental thus encouraged participants to answer from their frame of reference.

In line with Charmaz (2006), the in-built flexibility of the interview design (e.g., probes) allowed for abstract ideas to flourish, which, helped to evolve and develop the question schedule (through additional or/and restructuring of the questions) that was facilitated by a process of cyclical detailed data analysis (i.e., revisiting already analysed data and questions), coding of data, memo writing and subsequent consideration (i.e., 'constant comparative method of data collection,' Charmaz, 2006, p. 25). For example, the question, why did you start each activity? Prompted responses such as 'I just fancied doing it' and 'when I was out with my dad I saw people doing stuff.' Whilst these responses provided appropriate answers to the question asked, the information was somewhat limited in terms of determining more accurately the underlying sources for engaging in an activity. Therefore, by including a secondary or probing question (e.g., was there anything or anyone that influenced your decision to participate in physical activity?) triggered responses such as 'teachers were good at school and introduced us to loads of activities.' These responses provided deeper and more meaningful data. For example, the teacher offered a variety, and what seemed to be a choice of activities, which, according to Deci, Vallerand, and Pelletier (2004), ensures the basic psychological needs are supported.

This in-depth process of cyclical and flexible design, along with analysing transcripts, writing memos, exploring emerging theories from codes, and use of theoretical sampling continued throughout the interviews until theoretical saturation was reached (Corbin & Straus, 2008).

Adopting a qualitative approach to interviewing means recognising the context in which that interaction takes/took place. For example, both parties (the researcher and the participant) come to the interview with views of the world, personalities and predispositions that influence what is understood and said in that interaction. If either party acts in a certain way, then what gets said (i.e. the data produced in that context) will invariably be different. So, for the qualitative aspects of this study, the researcher had to become reflexive of his own influence in the production of data.

Reflexivity

Reflexivity involves critical thinking and awareness about what you are doing and why you are doing it; questioning what assumptions you have about the research; and documenting how your own views and experiences shape the research you do, how you interact with people and how you interpret what they say, and how gender, ethnicity or social class may shape how participants react towards us, or indeed how we react to participants (Punch et al., 2013, p. 121).

In studies two and three, the researcher was gathering data from (or, producing data with) different populations, adolescents in college and professional educators in their institutional setting. In these two contexts, a deliberate and different approach was adopted. Study two involved work to reduce power inequalities in the interview, for fear that the participants may view the researcher as an authority figure and potentially respond to questions in ways they believe might be most appropriate. So, in this context, the researcher dressed informally, took the time to chat with participants, share information about, for example, being a father to a teenager to try to minimise the perceptions of an authority figure and elicit information that was more honest about the topic in hand. For study three, it was decided to dress and behave more formally to indicate a degree of respect to professionals, to position the researcher as a professional and to converse in an appropriate manner. However, the researcher was mindful that by dressing differently may have provoked different responses from the participants. For example, by dressing and behaving less formally might have created a more relaxed atmosphere thus enabling more detailed information on the more sensitive issues.

Quality in Qualitative Research

The terms reliability and validity are rarely used in qualitative research, but just as with quantitative data the quality of the data and the conclusions derived are equally as important (Thomas, Nelson, & Silverman, 2011). Silverman, (2010, p. 275) defines 'validity' as 'another word for truth.' There are several terms used to describe the quality of qualitative data which continue to evolve, but the term most often used in this research paradigm is trustworthiness (Lincoln & Guba, 1985).

Although reliability is a criterion standard for evaluating quantitative inquiry for qualitative research, some researchers say that 'the concept of reliability is irrelevant' (Golafshani, 2003; p. 601) and even 'misleading' (Stenbacka, 2001, p. 552). However, Patton (2002) suggests that researchers should be concerned about reliability (and validity) while designing a qualitative study. Healy and Perry (2000) emphasise that the research quality for each paradigm should be judged on each paradigm. Therefore, while reliability and validity are a necessary criterion for quality in quantitative paradigms, providing evidence of trustworthiness in a qualitative research paradigm are constructed as Credibility, Dependability or Consistency, Confirmability or Neutrality and Transferability or Applicability (Lincoln & Guba, 1985). A point to note is that dependability in qualitative research is closely associated to the term reliability in quantitative research (Lincoln & Guba (1985).

Credibility. In quantitative research, part of the key criteria addressed is internal validity which seeks to ensure that the study assesses or tests what is essentially intended (Shenton, 2004). In qualitative research, internal validity is termed 'credibility,' which refers to the value and believability of a study (Lincoln & Guba, 1985). Morris and Burkett (2011, p. 31) expand on this and write that credibility in qualitative research 'is the truth value of the findings or the believability of the words of the participants and is based on the environmental context of the participants.' Morris and Burkett (2011) go on to point out that qualitative researchers need to carry out their research in a believable way and demonstrate the credibility of their work. These features should be made clear otherwise readers will find difficulty in evaluating the findings and conclusions of a study (Thomas et al., 2011). Lincoln & Guba, (1985) debate that the most important factor in establishing the trustworthiness of a study is by ensuring its credibility.

In line with the provisions outlined in Table 4.2 (Lincoln & Guba, 1985), the qualitative studies in the present thesis (studies two and three) addressed the issues to

do with credibility by demonstrating the procedures used in the methods sections (Silverman, 2010). For example, criteria such as the ethical (e.g., consideration of the participants), procedures employed (e.g., based on grounded theory, content analysis and thematic analysis), organisational (e.g., school setting and university buildings), sampling of participants (e.g., purposive theoretical sampling, individual solicitation through emailing and snowballing techniques) and tactics used to help ensure participant honesty (e.g., participants were offered the opportunity to refuse to participate) are all presented and described.

Dependability. For quantitative inquiry, the issue of reliability is addressed by showing that the work carried out in the study can be repeated, with the same participants, the same methods, in the same context and can provide similar results (Silverman, 2010). However, because of the changing nature of the experiences or occurrences examined by qualitative researchers, the issues to do with reliability are challenging (Golafshani, 2003). In addressing the issue to do with dependability or reliability, Shenton (2014) suggests that the processes used in qualitative inquiry should be thoroughly reported to help enable future researchers to repeat a study of work. The present thesis addressed dependability by drawing from the work by Shenton (2014) who suggests that research reports should include sections devoted to:

a) The research design and its implementation, describing what was planned and executed on a strategic level.

b) The operational detail of data gathering, addressing the minutiae of what was done in the field.

c) Reflective appraisal of the project, evaluating the effectiveness of the process of inquiry undertaken.

For example, studies two and three used probing techniques during the semi-structured which is an invaluable tool towards ensuring the reliability of the data (Barriball & While 1994). The benefits of probing techniques can include, for example, the further explanation of the relevant issues and interests raised by the participants (Hutchison & Wilson 1992), the opportunity to provoke valuable and far-reaching information (Corbin & Stauss, 2008), and helps the investigator to clarify any discrepancies in the participants' accounts (Barriball, 1994).

Confirmability. In qualitative research, the term confirmability is the researcher's objectivity towards the study. Patton (2000) maintains that objectivity is very difficult to achieve in the qualitative paradigm and even in the quantitative paradigm, the difficulty of ensuring absolute objectivity is obscured by the investigator's biases (e.g., questionnaires are designed by humans, therefore, subject to investigator biases). Hammersley and Atkinson (1983, p. 191) said that 'data in themselves cannot be valid or invalid; what is at issue are the inferences drawn from them.' The process towards safeguarding confirmability or objectivity in a qualitative research paradigm needs to ensure as much as possible that the study findings originated from the accounts, ideas and experiences of the participants (Shenton, 2004).

For the qualitative studies in the present thesis, confirmability is addressed by some of the provisions outlined in Table 4.1 (Lincoln & Guba, 1985). For example, to reduce any bias associated with the study, the questions asked during the interviews were previously discussed and agreed by a second researcher. Pilot studies were also conducted to help provide assurances that the primary questions and secondary questions asked were appropriate and to offer the interviewer the opportunity to practice interviewing and gain initial experience. The pilot studies analysed were discussed with a second researcher to help reduce any biases (e.g., leading participant responses). Furthermore, objectivity was also scrutinised during frequent research team meetings which agreed upon and ensured due processes was employed for each of the qualitative studies. Also, detailed and in-depth methodological descriptions and audit trails including diagrams of how the data were analysed, are provided for the two qualitative studies to help ensure complete transparency and therefore, the integrity of the research findings (Shenton, 2004).

Transferability. The term transferability or external validity is defined by Merriam and Tisdell (2016, p. 253) 'as the extent to which the findings of one study can be applied to other situations.' In a health care context, the term generalization is used instead of transferability in applying the findings to situations, people, and other times than those from a study (Polit & Beck, 2010). Polit and Beck (2010, p. 1452) write that 'without generalization, there would be no evidence-based practice; research evidence can be used only if it has some relevance to setting and people outside of the context studied.' While the quantitative inquiry position is concerned with showing that the results of a study can be applied to broader groups or participants, for qualitative inquiry, it is harder to show that the findings and conclusions apply to other groups or

situations (Shenton, 2004). That said, other researchers argue that by providing sufficient contextual information and a thorough description of the phenomenon under investigation in a qualitative study, will enable readers of that study to make transferability inferences (Lincoln & Guba, 1985; Polit & Beck, 2010).

In line with the provision for transferability (Table 4.1), the present thesis (for studies two and three) provided background data to establish context of the phenomenon in question to allow comparisons to be made. This information is contained in the methods sections and broadly includes the details set out by Shenton (2014) below:

a) the number of organisations taking part in the study and where they are based;

b) any restrictions in the type of people who contributed data;

c) the number of participants involved in the fieldwork;

d) the data collection methods that were employed;

e) the number and length of the data collection sessions;

f) the time period over which the data was collected.

The next chapter (study two) adopts a qualitative research approach using semi-structured interviews to investigate the PA experiences of a sample of young people (across childhood and adolescence) attending a low SES Scottish secondary school. Through this research technique, it is hoped to gain a more holistic and unbiased understanding of the multi-faceted complexities related to the nature of PA in young people within a Scottish context form low SES backgrounds.

Table 4.2 Provisions that may be made by a qualitative researcher wishing to address Guba's four criteria for trustworthiness (cited in Shenton, 2004)

Quality criterion	*Possible provision made by researcher*
Credibility	Adoption of appropriate, well recognised research methods
	Development of early familiarity with culture of participating organisations
	Random sampling of individuals serving as informants
	Triangulation via use of different methods, different types of informants and different sites
	Tactics to help ensure honesty in informants
	Iterative questioning in data collection dialogues
	Negative case analysis
	Debriefing sessions between researcher and superiors
	Peer scrutiny of project
	Use of "reflective commentary"
	Description of background, qualifications and experience of the researcher
	Member checks of data collected and interpretations/theories formed
	Thick description of phenomenon under scrutiny
	Examination of previous research to frame findings
Transferability	Provision of background data to establish context of study and detailed description of phenomenon in question to allow comparisons to be made
Dependability	Employment of "overlapping methods"
	In-depth methodological description to allow study to be repeated
Confirmability	Triangulation to reduce effect of investigator bias
	Admission of researcher's beliefs and assumptions
	Recognition of shortcomings in study's methods and their potential effects
	In-depth methodological description to allow integrity of research results to be scrutinised
	Use of diagrams to demonstrate "audit trail"

CHAPTER FIVE – Study Two

Study two: To investigate using qualitative research, the physical experiences across the childhood and adolescent development stages of 18 Scottish youths from a low socio-economic status (SES) catchment (all of whom volunteered to participate in a secondary school PE and recreational programme).

Introduction

The purpose of this study is to investigate through qualitative research techniques Scottish youths' (attending a secondary school in a low SES catchment area) physical activity (PA) experiences across their childhood and adolescent development stages. By studying Scottish young people's experiences in this way, it is hoped to gain a richer and more in-depth understanding of the nature of their PA. The rationale for using this approach results from the findings from study one (outlined below) which quantitatively investigated young people's club-based activity sessions. Also, the concerns highlighted in the literature suggest that young people are not participating in sufficient levels of PA to benefit their health and well-being, especially those from lower SES backgrounds (British Heart Foundation [BHF], 2015).

Historically, research investigating young people's club activities, sport, and PA participation has mostly used quantitative methods, which have assumed cross-sectional studies of pre-determined questions such as to do with participants' attitudes and levels of participation (Allender, Cowburn, & Foster, 2006). Although quantitative research is considered cost effective and efficient to administer (e.g., BHF, 2015; Department of Health [DoH, 2011), the complexity of PA choices and the multi-factor influences on them warrants a research methodology that can more broadly capture what is going on.

An alternative approach is necessary to address the more contextual, economic, social, and cultural features which can influence the nature of young people's PA (Thomas, Nelson, & Silverman, 2011). Qualitative research can provide this more in-depth approach into young people's experiences and perceptions of the barriers and motives to participate in PA. This research method utilises techniques such as interviews, which can enable researchers to gather rich and meaningful data by allowing participants to express themselves through their experiences, knowledge and opinions (DePoy & Gitlin, 1998). Further discussion on the use of qualitative research

as part of the more pragmatic approach to research within a mixed studies design is discussed in chapter four, (pp. 79 - 93).

Study one (in the present thesis) was a quantitative research approach using self-report measures (i.e., questionnaires) to investigate the weekly club activity sessions and motivational factors in a sample of young people in Scotland. Specifically, the study looked at the differences in the amounts of weekly club activities by gender and SES, the differences in the motivational factors (i.e., intrinsic motivation, IM; perceived competence, PC; self-determination, SD), and which of these characteristics (gender, SES, IM, PC, and SD) are the most important predictors of weekly club activities.

Findings from study one demonstrated that SES was the most significant positive predictor of young people's participation in club activities and that those from higher SES backgrounds took part in more weekly sessions than those from lower SES backgrounds during school and out-of-school. Although reviews of previous research have highlighted some ambiguity (e.g., Stalsberg & Pedersen, 2010), this finding supports the general contention that young people from affluent families are more likely to participate in structured activities (e.g., sports activities) than those from less affluent families (Mota, Gomes, Almeida, Ribeiro, & Santos, 2007; Tammelin et al., 2003), particularly in out-of-school clubs (Inchley, Kirby, & Currie, 2008). In unstructured PA domains (e.g., active travel, active play, and active mobility) the research has shown that those from low SES backgrounds likely participate in more unstructured types of activity than those from high SES backgrounds (Stalsberg & Pedersen, 2010; Drenowatz, Eisenmann, Pfeiffer et al., 2010). At earlier stages of life, low (or no) cost unstructured activities (e.g., playing) may be a more common element of a child's PA participation (Sterdt et al., 2014) and factors such as low income may play a lesser role. As such, examining PA more broadly and across different life stages is important.

In contradiction to most previous research (Clark, 2008; Vilhjalmsson & Kristjansdottir, 2003; Toftegaard-Støckel, Nielson, Ibsen, & Anderson, 2011), there were no gender differences found in club participation levels in study one, either in school or out-of-school. Although as with SES, context may play a role. For example, Inchley, Kirby, and Currie (2008) have found that in walking and dance activities girls' participation was higher than boys. Also, at certain stages in life, girls' participation has been shown to decline more rapidly than boys (Currie, 2015; The Scottish Government, 2010), so again life stage is an important consideration. Motivational factors such as perceived competence and intrinsic motivation also played a role in

predicting out-of-school PA levels in study one. This finding is supported by the literature, highlighting the benefits of environments that facilitate basic psychological needs and intrinsic motives (Ryan & Deci, 2004; Markland, 1999). However, the predicted variance of the regression models was low, highlighting the need to consider a multitude of factors to fully understand the complexities of the influences of PA. This is perhaps unsurprising given the breadth of factors that have been shown to influence PA, for example, as outlined in the ecological model of the determinants of PA (Bauman et al., 2012).

Many studies (including study one in this thesis) do not examine a full range and breadth of young people's PA. Koorts et al. (2011) has recommended that all aspects of young people's PA (e.g., between the context, type, and levels of PA) should be reported because they are vital towards accurately informing policy and PA interventions aimed at improving levels of participation. There is a clear need for more research to examine PA in young people from low SES young people (Sterdt et al., 2014; Tremblay, et al., 2014) across childhood and adolescence (Farooq et al., 2017). Also, there is limited qualitative research investigating the PA experiences and associated motivations in young people from low SES within a Scottish context. Therefore, this study sets out to investigate using qualitative research, the PA experiences across the childhood and adolescent development stages of 18 Scottish young people from a lower SES catchment.

Method

Participants

The participants (n = 18) in this study were secondary school year pupils (S5) mixed gender (males = 9 and females = 9) aged 16 to 17 years (m = 16.5; SD = 0.51) currently attending a Scottish state high school located in a low SES suburban catchment area (SES was confirmed using the Scottish Index of Multiple Deprivation [SIMD], A National Statistics Publication for Scotland, 2012) and enrolled, by choice, into a school curriculum sports and recreational studies programme. S5 pupils were selected for the following reasons: 1) Consent – pupils aged 16 years (legal adult age) provided their own consent which, subsequently reduced the level of permissions from gatekeepers (i.e., teachers, parents or carers), and 2) academic attainment and maturity - S5 pupils were presumed more likely to have suitable levels of academic attainment and maturity (i.e., they have successfully progressed into S5 education studies). Therefore, on this

basis, it was anticipated that S5 secondary pupils had the abilities to understand the research and the questions being asked during the interview, and effectively articulate information, providing more credible and trustworthy data (Barriball & While, 1994). A state high school was considered by the research team as an ideal source for this study because the provisions required to conduct qualitative research on young people were already in place and included the following:

- Variety of potential interview spaces (e.g., provision of offices and other public areas) providing participant's choice of where they felt most comfortable to be interviewed providing safety for both the interviewer and interviewee. Participant reassurance was achieved by the interview locations being in view of teachers and pupils (e.g., the office next to a common corridor and the door was left open).
- Increased the likelihood that participants would perceive the familiar environment (i.e., the school) as safe and familiar because, conducting semi-structured interviews can be a new and unusual experience for young people, therefore the school environment helped enable participants to feel secure enough to share their own related experiences related to the research.

A code was (Column one, Table 5.1) allocated to each pupil and used throughout the findings and discussion section. Each code represents gender (M = male and F = female) and the order in which the interviews took place, therefore, MP1 = Male, Pupil, interview one.

Participant Sampling

Purposive or purposeful theoretical sampling was adopted in this study (Corbin & Straus, 2008) which improved the conditions (through homogeneity) of the study, which subsequently improved the quality of the data collected to inform the present thesis phenomenon of interest (Palinkas et al., 2015; Patton, 2002). For example, although the participants met the initial criteria for the pilot study (i.e., attended the same college, were within the age limit criteria, aged 16 to 21, and were from low SES backgrounds) it soon emerged that their experiences were very different. For example, they all attended different schools including inner city urban and suburban schools, which for some was out with the UK, and all experienced different cultural and environmental circumstances outside of Scotland and the UK. On identifying these factors, participants were purposefully selected to provide information rich data to address the phenomenon of interest (Paton, 2002). For example, all the participants

were of a similar age (aged 16-17 years) and attended the same secondary school and year (suburban, low SES secondary school, S5).

Theoretical sampling was used to 'obtain further selective data to refine and fill the major categories' highlighted above (Charmaz, 2006, p. 12). For example, the data revealed that some of the participants were avoiding secondary school PE because they felt threatened through the humiliation they had experienced from other pupils and subsequently felt highly self-conscious.

Table 5.1 Coding and details of participants

	Coding	**Sex**	**Age**
1	MP1	Male	16
2	FP2	Female	17
3	FP3	Female	17
4	MP4	Male	16
5	FP5	Female	17
6	FP6	Female	16
7	FP7	Female	16
8	FP8	Female	16
9	MP9	Male	16
10	FP10	Female	17
11	FP11	Female	17
12	FP12	Female	16
13	MP13	Male	17
14	MP14	Male	16
15	MP15	Male	17
16	MP16	Male	17
17	MP17	Male	16
18	MP18	Male	16

Note. M = Male; F = Female; P = Participant; 1 to 18 = the order in which participants were interviewed.

Participant Consent

In line with the Age of Legal Capacity (Scotland) Act 1991 and The Children (Scotland) Act 1995 young people are considered capable of giving consent when they are deemed competent to do so (e.g., by a researcher or teacher) because they are

capable of understanding what they are expected to provide. The potential volunteer participants were given the required consent forms (Appendix 5.1) to complete themselves along with the participant information form concerning the nature of the study (Appendix 5.2).

The potential participants were allocated an interval between giving consent and being interviewed (minimum period of seven days). This interval period was allocated to enable the potential participants the time to absorb the information and provide them with the opportunity to discuss with and ask questions (e.g., with parents, carers, teachers, and friends) on any concerns they might have had on any aspect of the research and their part in the research (i.e., the interview). The potential participants were on several occasions throughout the process (e.g., prior to completion of consent forms, prior to commencement of the interview during the interview, and on completion of the interview), reminded of their rights to:

- Refuse to participate without adverse consequences
- Not answer specific questions without having to give a reason
- Withdraw from the research at any point without any adverse consequences

Parental or Carers Consent

Although not legally required, the participants were asked (during the interval between their consent and interviews) to give their parents or carers the information sheet and consent form outlining the research project (including contact details of the research team) and offering them (the parents or carers) the opportunity to opt-out (their children) from participating in the present study (Appendix 5.2). The participants were asked immediately prior to their interviews to tick a box on their consent form indicating they had informed their parents of their participation in the present study. Approval to conduct the present study was gained through the Edinburgh Napier University Ethics Committee.

Interviews

A total of 18 semi-structured interviews were carried out with secondary five (S5) pupils from the school mentioned earlier. The purpose of the interviews was to investigate the views and experiences (during childhood, and adolescence) of PA in Scottish young people from low SES backgrounds.

The questions used in the interviews were designed in line with Hill, Le Grange, and Newmark (2003) along with the findings in the literature and from study one, which, along with the assumption that the qualitative approach (i.e., semi-structured open-ended questions) would generate a deeper understanding of the data collected. Prior to the commencement of the interviews, the questions were then discussed with a second researcher (PhD supervisor) (see questions schedules at Appendix 5.3a). Both researchers agreed that the questions within the interview schedule would provoke appropriate responses to the areas under investigation.

The questions were then piloted with four college students of mixed gender (males = 2; females = 2) aged 16 to 18 (m = 17; SD = 0.82). This process provided assurances that the questions were suitable and provided the researcher with the opportunities to practice and refine interview techniques and processes with young people. This revision brought about some minor changes to the questions, which gave their meaning more clarity, and helped in the development of secondary and more probing questions (Appendix 5.3b).

The interviews were conducted (and recorded) in an area free from distraction. The nature of the interview design (i.e., semi-structured) helped to provoke the participants to answer the same questions in each interview (see chapter four for further information, pp. 86 - 88) and provided participants with the opportunity to pursue personally relevant areas (Podlog & Eklund, 2006). The researcher provided a summary of participant responses at the end of each interview to verify understanding and accuracy (Bench, 2007). Each interview lasted between 50 and 90-minutes.

Data Analysis

The purpose of the data analysis was to interpret and attempt to understand the participants' PA experiences focusing on the types of activity, the underlying sources responsible for their engagement, and disengagement from participation and the psychological, social, and other factors involved.

Each of the recorded interviews was transcribed and then analysed using NVivo 10 for Windows qualitative data analysis software package (QSR, International Pty Ltd, 2014), which contributed towards coding, theory building, and the emergence of concepts key themes, and categories (Charmaz, 2006; Corbin & Straus, 2008). This information was collated and then presented in a tabular format showing total occurrences of words and phrases as codes. The codes were then converted into total

percentages for each of the activities (i.e., AT-1; AT-2; AP-1; AP-2; VSA; IMS) and participants (i.e., boys and girls) (Appendix 5.4).

The initial inductive approach (Charmaz, 2006), utilised hierarchical content analysis as outlined by Cote, Salmela, Baria, and Russell (1993) through three stages: 1) coding experience, 2) inductive inference, and 3) similarity processes. Themes and categories that emerged from the data were represented and supported by quotes in the results and discussion section (Martindale & Nash, 2013). To accomplish this, the lead researcher (who also conducted the interviews) read and re-read the transcripts along with supporting field notes (taken during the interviews), and memos. Concepts and themes then emerged through the constant comparative analysis.

A second researcher (PhD supervisor) then reviewed the lead researcher's interpretation of concepts and themes, therefore, ensuring investigator triangulation (Patton, 1990). This resulted in numerous discussions that brought about the critical reflection of each of the higher-level concepts, the emergent themes and categories, and the opportunity for both researchers to agree on the most valuable and salient factors in the context of this investigation.

The results presented in Appendix 5.5 provides detailed statistical information analysed by the researcher, supported by NVivo 10, and which were used to determine the types of PA pupils participated across their childhood and adolescence. Although the computer software provided a useful organisational tool, its inherent limitation was apparent from the analysis of the more qualitative empirical evidence, where it lacked the sensitivity to fully comprehend the importance of the data (Charmaz, 2006). While computer software such as NVivo 10 can efficiently organise, store, and manage the data it does not code the data itself in a creative or intuitive manner. This part of the analysis (the coding of the data) remains the responsibility of the researcher (Saldaña, 2013). Data analysis requires researchers to possess skills such as deduction, induction, abduction, synthesis, logical, and critical thinking and evaluation which is where computer software is limited (Saldaña, 2013).

In the present study, memo writing was used to provide the researcher with opportunities to stop, stand back, and look more closely and analyse ideas about the codes (Charmaz, 2006). By doing this kept the researcher closer and more involved in the raw data which allowed for the formation of the codes and ideas, subsequently leading to the emergence of higher levels categorisations and themes. To achieve this, the researcher wrote these ideas and codes on sticky notes which were then placed on

white boards. This sorting of the codes (lower level to begin with) on white boards brought about a diagrammatic form of observing the codes through mapping to create a more sophisticated analysis (Braun & Clarke, 2006). This method of sorting the codes allowed for the integration (of these codes) and the subsequent formation of higher level categorisations (of codes) and themes. Straus and Corbin (1998) describe this diagrammatic process as creating visual images of the emerging categorisations and themes.

Findings and Discussion

Through systematic analysis of the participants' PA experiences two macro themes emerged as 1) the nature of PA in Scottish youths throughout key development stages and 2) two transitions separated three key stages in young people's development impacting on PA.

Macro Theme-1: The Nature of PA in Scottish Youths Throughout Key Development Stages

In the present study, early analysis revealed participants' experiences in PA emerged from three key stages of development which were: 1) The childhood stage, 2) the adolescent stage, and 3) the early adulthood stage. A review of the literature revealed the childhood and adolescent stages are currently referred to by Education Scotland (2014) as descriptors to categorise a young person's social and educational status (i.e., The childhood stage was closely associated with primary school and the adolescent stage was closely associated with secondary school). However, in the present study a third stage emerged from the data and was identified as the early adulthood stage. The rationale for this third stage was related to a person's legal capacity, which, in Scotland is aged 16 years (Age of Legal Capacity [Scotland], Act, 1991). Also, it was also related to changes in most participants' perceived levels of autonomy and their sense of responsibility that seemed more apparent at 16 years of age. This is discussed later in this chapter.

Throughout these three stages, analysis of the data revealed participants' PA experiences emerged within two domains, which, in the present study were categorised as in-school PA and out-of-school PA. Furthermore, continued analysis revealed participants type of PA within these two domains emerged as being structured PA defined in the present study as participation in formalised PA directed by adults such as

school physical education (PE), organised sport or girl guides and cubs, and unstructured PA defined in the present study as participation in activities such as walking/running and playing (Department of Health [DoH], 2011).

Most of the research describes PA in young people in the context of school and out-of-school (Currie et al. 2015; Inchley et al. 2008) and is often referred in these domains as being organised or structured and unorganised or unstructured types of activities (Currie et al., 2015; DoH, 2011). Table 5.2 illustrates this by describing types of PA as either structured or unstructured and also provides examples of activities associated to each of these categorisations. The DoH, (2011) describes structured PA as formalised and directed by adults and unstructured PA as informal free play PA with little input from parents or carers. These terminologies are often used to describe levels of PA in young people during both in-school and out-of-school (Kirby & Inchley, 2009; Currie et al. 2015). For example, school structured PA is usually PE and after school sports clubs. In-school unstructured PA is usually active travel to and from school (Currie et al., 2015; Kirby & Inchley, 2009) and active play during scheduled breaks (Bromley et al., 2013; Corbett et al., 2010).

Table 5.2 Types of PA

Type of activity	Examples
Unstructured (children)	Indoor or outdoor play, active travel
Unstructured (young people)	Social dancing, active travel, household chores, temporary work
Structured (children and young people)	Organised, small-sided games with equipment that maximises success (large racquets, low nets, big balls etc)
	Educational instruction (through teaching and coaching) that promotes skill learning and development
	Sport and dance

Note. Adapted from Department of Health, Physical Activity, Health Improvement and Protection (2011). Start Active, Stay Active: A report on physical activity from the four home countries (11 July 2011). Retrieved from https://www.sportengland.org/media/388152/dh_128210.pdf

While these findings partly support existing research, which describes young people's PA as structured and unstructured activities (DoH, 2011), what emerged from the present study (not shown in previous research), was the merger of domains (in-school and out-of-school) and types of activities (structured and unstructured) into four categorisations as follows:

- In-school structured PA (e.g., school PE)
- School unstructured PA (e.g., active travel – to and from school and active play during morning/lunchtime breaks)
- Out-of-school structured PA (e.g., organised sport and youth clubs)
- Out-of-school unstructured PA (e.g., active travel and active play)

Early analysis grouped types of PA into groups highlighted previously in the literature which were school PE, school curriculum directed; active travel (AT), normally described in the context of human active transportation to move from one point to another and used by many academics to describe characteristic of walking, cycling or running (e.g., Biddle & Mutrie, 2008; Currie et al., 2011; Inchley, et al., 2008); and active play (AP), where the normal characteristics of play behaviours are intrinsically motivated, personally directed, and spontaneous types of activities (Brockman, Fox, & Jago, 2011). In the present study, further analysis revealed the emergence of additional sub-categorisations of these already used categorisations which were (and defined as) active travel-1 (AT-1), walking to and from school; active travel-2 (AT-2), walking out-of-school (e.g., in the local neighbourhood); active play-1 (AP-1), in-school unstructured activities (e.g., in the designated play areas during break times); and active play-2 (AP-2), out-of-school unstructured activities (e.g., playing with friends in the local streets the local park, and the Astroturf). In addition, two further categories emerged as various structured activities (VSA) and identified with a main sport (IMS).

Although these findings reflect some of the key points raised through participants' experiences, they do not fully represent the richness and depth of information gathered. The use of rich description helped to assert a level of credibility, which, also facilitated the constructionist perspective to both conceptualise the participants' experiences and providing greater detail concerning the underlying reasons responsible for engagement, disengagement, and re-engagement in PA throughout the key stages (Charmaz, 2006; Corbin & Straus, 2008). These categories and sub-categories are discussed next beginning with the childhood stage.

Key points:

- Three key development stages (the childhood stage, the adolescent stage, and the early adulthood stage) emerged including early adulthood which previous literature does not report as being a stage.
- Young people's PA occurred within two domains as in-school and out-of-school.
- Types of PA within the two domains were categorised as structured and unstructured.
- Active travel was sub-divided into AT-1 and AT-2.
- Active play was sub-divided into AP-1 and AP-2.
- Two further categories emerged as VSA and IMS.

Childhood Stage

In-school structured PA

For the participants in this study, the childhood stage would have been around the period when new developments, programmes, and initiatives in PA were being rolled out across the UK and Scotland (Scottish Executive [SE], 2003). Subsequently, these led to government support through the introduction of the Active Schools Programme (Sportscotland, 2003), the inclusion of PA as part of the Health Promoting Schools Unit (Learning & Teaching Scotland, 2005) and the National Review of Physical Education (SE, 2004). These came about primarily in direct response to previous and numerous reports suggesting children in Scotland were becoming less active (The Scottish Executive Department of Health, 2000) and that this lack of activity increasingly led to reduced PA in adolescence and into adulthood (Cale, 1996). Furthermore, it was thought that the childhood years were the best time to develop a solid foundation for lifelong PA (Cavill, Biddle, & Sallis, 2001). The participants' structured PA experiences in primary school (e.g., school PE) are discussed next.

As expected, all participants reported taking part in primary school curriculum PE that included mostly core sports such as football, rugby, rounders, gymnastics, and basketball. The following participants comment:

> FP7: We did things like basketball and gymnastics and rounders… sort of sprinting races up and down the hall, and did some tennis too. We would different activities like, football, badminton and basketball. Sometimes the teachers would teach us to do rugby and we'd do other stuff like gymnastics.

MP4: In primary school, I played football, basketball and just general PE, all fitness and sports.

MP17: And you would get your PE time as well in primary school which was in the hall… there was a climbing frame where we'd do our climbing and used to get the big platforms out and do gymnastics. We also did badminton. Basically, we did lots of sports in PE like football and basketball in primary PE.

MP18: We were playing basketball, with smaller hoops and the goals would be smaller for the football and it is like adapted games and rounders moistly in primary…climbing frame and the gym mats, and stuff like that. Gymnastics and the beam and stuff.

Some participants reported taking part in organised walking, running, play activities and fitness testing (e.g., the multi-stage fitness sometimes referred to as the bleep test). This was illustrated as follows:

MP13: During primary school, I would do PE… walking, jogging, running… I used to do the bleep test.

FP5: Like they'd put out loads of stuff and you'd like to run over, run around, and under and jumping. And going in and out of tyres.

FP11: There was a lot of running in primary school. We used to do tests, running tests. We'd do lots of games like tig.

As mentioned earlier, previous guidelines recommended Scottish children (aged 5 – 14) should accumulate at least 60-minutes moderate to vigorous physical activity (MVPA) up to several hours every day, (Scottish Government, 2016). In the present study, participants appeared to have mixed recollections on the amount of PE they participated in with some reporting one period of PE per week, and others reporting two periods of PE per week. The following participants illustrated this:

MP4: I did PE twice a week for an hour each session.

FP5: I think we only done PE once or twice a week in primary school. It wasn't a lot.

FP6: We only took part in PE once or twice a week in primary.

FP7: Like, in primary school we had PE twice a week for an hour each session

> FP8: Like one of the PE teachers would come to our school, like, once a week they would come to our school and just take us to a lesson and teach us how to play basketball and like rugby…and through lots of different activities.
>
> FP11: I took part in PE once a week. Then went out to the playground and ran around
>
> MP15: At my school, we were doing PE every Tuesday afternoon - once a week.

This finding is consistent with Inchley et al. (2008) who reported that most P7 pupils (73%) took part in only one PE session per week with less than 20% reporting two sessions of PE per week. However, when considering levels of energy expenditure (Ainsworth et al., 2011), even if the maximum of two periods of PE had been achieved in any one-week and that each session was presumed to accumulate 60-minutes MVPA, the recommended guidelines (least 60-minutes MVPA up to several hours every day, The Scottish Government, 2016) could not have been achieved. Indeed, Warburton and Woods (1996) in their study found MVPA was rarely achieved for longer than 10-minutes during a PE session and that PE did not contribute to long-term health. This was supported by Waring, Warburton, and Coy (2007) who reported 18% of MVPA for each lesson and more recently, Wood and Hall (2015) looked at the actual duration primary school children in UK are PA during PE lessons and demonstrated that children only spend an average of 10% of their lessons engaged in MVPA.

Ainsworth and colleagues in their study found that MVPA, measured as metabolic equivalent (MET) values for activities, differs from person to person and that these values are highly dependent on the type of activity participated in. For example, during a football session, in PE, pupils would struggle to run at high, moderate or even low intensity levels for 60-minutes. Also, levels and intensity of PA can be influenced by the position played in the team. For example, a goalkeeper's PA output will be far less than that of an outfield player (Salvo et al., 2007).

The Chief Medical Officer (CMO, DoH, 2011) recommended that all young people (aged 5-16 years) should engage in MVPA for at least 60-minutes and up to several hours every day. To help achieve this in Scotland, the introduction of the Curriculum for Excellence (CfE) included updated guidelines, which set out a commitment that by 2014 every school pupil in Scotland will benefit from at least two hours per week of PE in primary school (The Scottish Government, 2012). However, when considering earlier discussions (MET values and levels of physical activity during

school PE), the introduction of these updated guidelines (as part of the Curriculum for Excellence), would not achieve the CMO recommendations on its own. Although, if children are assumed to engage in other forms of PA other than PE as indicated by Inchley et al. (2008), then their levels of MVPA would be greater. For example, Inchley et al, (2008) reported primary school children also participate in AT (e.g., walking to and from school) and AP during break times (playtime), which, although is not structured, as in a PE session, nevertheless involves children being physically active for varied durations and at mixed levels of intensities on every day of the school week. Young people's in-school unstructured PA experiences is looked at next.

Key points:

- Participants reported participating in one or two PE sessions per week which was consistent with previous research.
- Participants were likely not achieving the recommended PA guidelines of at least 60-minutes MVPA up to several hours every day (The Scottish Government, 2016) through primary school PE).
- During a typical PE session, MVPA likely differs from pupil to pupil and is dependent on factors such as the type of activity (and position played in team games sports). For example, in team sports goalkeepers will likely achieve less MVPA than an outfield player.

In-school unstructured PA

As highlighted in the previous section, children are physically active in a variety of different ways whilst at primary school (other than just school PE) taking part in less structured activities such as AT and AP (Inchley et al. 2008). In the present study, it emerged that participants take part in, in-school unstructured PA including AT-1 (defined in the present study as walking to and from school) and AP-1 (defined in the present study as in-school recreational activity normally during breaks). These two categorisations of PA are discussed next.

AP-1. During school playtime and lunchtime breaks, all the participants (100%) reported taking part in AP-1, which included activities such as free play (e.g., running around, tig, skipping and hide and seek), and depending on the weather, determined whether play occurred outside when conditions were suitable, or indoors when

conditions were inclement (Table 5.3). Some even reported playing football in the playground before school had started. The following participants describe examples of these activities:

> MP4: In primary, I went out and played in the playground during school breaks and ran about and I used to join in and play rounders. We used to play games like skipping.
>
> FP7: I used to play at tig [during primary school breaks] and we'd have races between classes, and, we played hopscotch and stuff like that.
>
> FP11: I went out and played in the playground and just ran about. We'd also play at skipping in the breaks at primary.
>
> FP12: At break and lunchtime, we took part in loads of games. We would play tig and hide and seek and just generally ran around.
>
> MP15: We would run around about playing at being aeroplanes and stuff.
> MP17: Before school started, we used to play in the morning, then at playtime and at lunch time we'd play football.
>
> MP18**:** Before school, we used to play football. There is a mini Astro turf beside the school so everybody used to play football there before school.

Previous studies suggest the school playground provides the ideal setting for encouraging children's PA (Zask, van Beurden, Barnett, Brooks, & Dietrich, 2001) and that PA during school breaks contributes to daily MVPA (Mota et al., 2005). Mota et al. (2005) and Zask et al. (2001) found school breaks offer the opportunity to increase MVPA for both genders, particularly for girls. Mota et al. (2005) suggested playground activities accounted for 19% of girls and 15% of boys overall recommended MVPA. However, the potential contribution school breaks have on Scottish children's MVPA and their health and wellbeing appears to be underreported. For example, playground PA was not reported in previous and recent Scottish Health Surveys (Bromley et al., 2013; Corbett et al., 2010), and while the present study cannot offer an accurate account of MVPA achieved in school breaks (AP-1), it is evident that children are participating in activity, which, if more accurately accounted for, would contribute to their overall MVPA (Sirard & Pate, 2001).

AT-1. Throughout the childhood stage, most participants (84%) reported walking and or running (AT-1) to and from primary school on most days of the week before and after school, which, for some also included walking home during the lunchtime break

(Table 5.3). All the girls (100%) and almost two thirds of boys (67%) said they walked to school during their childhoods. This is demonstrated by the following participants:

> MP4: I would walk to school [primary school], walk back from school and maybe on days when it was raining or snowing I got a lift from my dad or my grandad.
>
> FP7: I walked to school [primary school] and would run home sometimes. It was about 20 minutes' walk to school. It was about a mile and a bit distance to school.
>
> FP10: I walked to school, I walked back from school, and at lunchtime I walk to my Grans and back for lunch…It took me 20 minutes to walk to school and back from school. At lunchtime, I'd walk to my grans too which took about 15 minutes.
>
> FP11: Yes. I walked to school every day. I'd d sometimes walk with my mum and sometimes I'd walk with my pals when I got older.
>
> MP16: I'd used to walk to school every day in primary for about 20 minutes to school. I used to come home for lunch so I'd walk to and from home for lunch. I used to walk to primary school with my friend. I used to chap [call in on] on him. He stays on the corner of the street.

Table 5.3 Percentage of participants participating in unstructured physical activity in school during childhood

Physical Activity	Both (%)	Boys (%)	Girls (%)
AT-1	84	67	100
AP-1	100	100	100

Note. AT-1 = Active Travel-1; AP-1 = Active Play-1

Several participants reported being driven to school (mentioned above by MP4 and FP7) on occasion by their parents, however, for some of the participants walking was not a choice; it was in fact their only means of transportation to and from school. Furthermore, some pupils accepted walking as being part of 'daily life.' The following participants demonstrate this:

> MP15: I walked to school (primary school), run home sometimes…I spend a lot of time walking… it's just part of daily life, you have to do it no matter who you are. I feel as if you have to walk to go to places, and to get to things.
>
> FP7: I just walked to school as that was the only way for me to get to school [primary school] as my mum and dad didn't have a car. I was only ten minutes though.

Previous research might suggest that the reported levels of participation in AT-1 (accumulated during walking to and from school) may contribute to overall levels of daily MVPA (Kirby & Inchley, 2009). When considering MET values, participation in AT-1 shown in the present study may well be equivalent to the more structured activity MET values expected during school PE. For example, Mackett, Lucas, Paskins, and Turbin (2005) found that walking to and from school for a week accumulates similar benefits to a two-hour PE session. These findings, along with the findings from the present study suggest that primary school aged children from lower SES backgrounds perhaps participate in more activity through AT-1 than previous studies using self-report measures. For example, Currie et al. (2011) reported only half of school-aged children walked to school and that most children travelled to school by bus or car. However, their study reports on children from mixed SES backgrounds, whereas, the present study reports on low SES only.

The findings from the present study showed that children from low SES backgrounds likely participated in high levels of AT-1, which, might be explained by them not having access to buses or cars to transport them to school. This finding is supported by the work carried out by Ogilvie, Mitchell, Mutrie, Petticrew, and Platt (2008) who investigated AT patterns in deprived populations. They demonstrated that higher levels of AT in young people is linked to deprivation and that this was due to them not having access to cars. Murtagh and Murphy (2011) reported on the levels of AT in children and found that those participating in AT had higher daily step counts than those using more passive modes of travel such as buses or cars. In addition, research carried out by Hillman, Adams, and Whitelegg (1990) found that declines in AT were not only linked to increased use of cars, but also parent's concerns for their children's safety. More recently, a review carried out by Carver, Timperio, and Crawford (2008) found low levels of AT is directly associated with a lack of perceived neighbourhood safety and that parent's fears are mostly fuelled by issues to do with road safety and stranger danger leading them (parents) to restrict their children's AT.

This is not supported in the present study, where most pupils (girls = 100% and boys = 67%) reported AT-1 in childhood. As highlighted earlier, these contrasting findings may well be due to previous research reporting on mixed SES rather than just lower SES (reported in the present study).

These findings provide some insight into the nature of young people's PA by suggesting that children living in lower SES suburban areas participate in regular amounts of PA through AT-1. Also, parents' anxieties to do with neighbourhood safety are low. The next two sections set out to examine participants structured and unstructured PA experiences in an out-of-school environment.

Key points:

- All participants reported taking part in AP-1 in childhood (boys = 100% and girls = 100%).
- More girls (100%) than boys (67%) reported taking part in AT-1 in childhood.
- Higher reporting of AT-1 may be associated with lower SES and limited transport options.

Out-of-school structured PA

More than three quarters (78%) of participants (boys 78% and girls 78%) reported taking part in VSA out-of-school (Table 5.4), which seemed to be mostly sports based, although some also reported going to Cubs and Brownies, which would have included some form of structured PA. The following participants demonstrated this:

> MP4: I used to go swimming in the early years [in childhood]. I used to go swimming regularly maybe once, twice a week with my parents. I used to do football at the local club. I used to throw Frisbee and sometimes other general exercise, cubs and that.
>
> FP8: I've always done dance out of school. I'd do different types of dancing like jazz, hip hop, contemporary and choreography. I used to go running in the park and liked bike rides. I used to play football with my friends at the local club.
>
> MP9: I used to go to Tae Kwon Do. I used to do it. I started when I was in P3. I used to play football too.
>
> FP12: I went to Brownies…I used to go swimming…I went to dancing…I used to go to the Sunday club where we'd play games.

MP15: I always used to play football and went swimming when I was about five or six. I played at a football club. My mum always used to come and watch me play…I always had to be doing something. I watched my big brother playing football so that made me play football. I went swimming when I was younger too.

MP16: I used to do judo when I was younger in Danderhall…I used to do skiing at Hillend. Skiing lessons and snowboarding it was great…I'd go jogging after school when I was a bit older which was to get my fitness up for the football. I never went to boy scouts, but I went to boys' brigade. That is quite fun being out in the woods.

MP18: All I can remember is swimming. I did Judo. I done that for a while. There was that, swimming, football…I think I played badminton outside [of primary school] a couple of times. That was roughly it.

Some participants seemed to demonstrate irregular patterns of engagement in activities (sometimes several at the same time), which, for some included several activities at different stages in childhood (e.g., between ages 5 – 11 years). Many seemed to only continue to participate for short periods, before dropping out altogether. The following participants illustrated this:

FP3: I would say I took part in activities for about under a year, then I stopped altogether when I was 10 years old. This was because I was getting older and just wanted to hang out with my friends more. My friends weren't doing any activities anymore. I'd go to training and my friends weren't there and I didn't want to be left out.

FP5: I used to go to the gym with my mum [to do badminton]. This went on for, I would say about a year and a bit, and then my mum fell ill and she couldn't do it anymore so I stopped.

MP9: I started Tae Kwan Do when I was like primary three, but stopped at during primary four or five. I don't know why. I was playing for a football team but they got put down to a different division and everybody just left and the team just folded.

FP8: I stopped doing dancing one summer because it was like you had to pay for it…and my place got taken.

FP10: I did kickboxing and I did that for a year maybe longer. Then I just stopped doing it because none of my friends were doing it.

Table 5.4 Percentage of participants participating in structured physical activities out-of-school during childhood

Physical Activity	Both (%)	Boys (%)	Girls (%)
VSA	78	78	78
IMS	50	67	33

Note. VSA = Various Structured Activities; IMS = Identified with a Main Sport

During the analysis, it emerged that some pupils 'identified with a main sport' (e.g., those participants who stated that they took part in mostly one sport as their main activity) as well as participating in other structured activities, although not all of those identified with a main sport' also reported participating in VSA. This is reported as follows: Half (50%) of pupils 'identified with a main sport' during childhood (Table 5.4), although more boys (67%) reported this compared to girls (33%). The type of 'main sport' reported seemed to be gender specific whereby all the boys reported football as their 'main sport' and all the girls reported dancing as their 'main sport.' This finding seems to echo cultural stereotypical perceptions of gender specific sports that Wheeler (2011) reported as gender (i.e., stereotyped activities which for males included football) while for girls it was dancing. Furthermore, Birchwood, Roberts, and Pollock (2008) reported cultural gender stereotypical perceptions are transmitted through families (e.g., parents), which subsequently influence their children's choice in sport. In the present study, this is commented on by FP6 who recalled what her dad said to her about playing football as follows:

> My Dad said that 'football is more of a boys' sport than a girls' sport.' No really its [football] a guy's sport. There aren't many lassies that play football.

Research in Scotland seems to indicate gender differences exists in sport and other structured PA, and that males tend to participate in more sports than do females (Bromley et al., 2013; Corbett et al., 2012; Currie et al., 2011). However, this was not found in the present study, which, suggests that there was no difference in boys and girls participation in 'various sports' during childhood (both 78%), although, more boys

appeared to identify with a ‘main sport’ than did girls. This finding is shows similarity to study one, which reported no differences between boys and girls out-of-school weekly club activity sessions. Also, in the present study, it was found that parents and families seemed to play an important role in influencing levels and type of sport participation. This is illustrated as follows:

> MP1: My dad was stricter than my mum. That’s why I live with my mum. If I was living with my dad I’d probably still be doing sports and other activities.
>
> MP4: My dad and my grandad, all my parents and relatives, were always encouraging for my sports and would take me and support me whenever possible. My uncle and Auntie from other sides of the world, we’re coming over to support me whenever possible. I think that had an encouraging effect. Making me drive more…more success really.
>
> MP13: My mum never forced me into doing any of my activities [sports, cubs etc] although they [mum and dad] would rather I was outside. My mum said, it’s my choice. She can’t force me to do something [sports and other activities] and she knew I wanted to do my own thing. Mum wasn’t happy that I stopped because she was concerned I wasn’t getting enough exercise.
>
> MP15: Most of my whole family played football and it just felt right I had been brought up with it...I just always played it.

This apparent association between family and children’s participation in PA partly supported by the work carried out by Fredricks and Eccles (2005), who found that the beliefs of parents strongly influenced their children’s beliefs and PA outcomes, and although their study focussed on US middle class families with an interest in Athletics, there were important similarities to that in the present study. For example, findings from the present study suggest parents influenced their children’s PA outcomes. When considering both studies it seems parental influences are a factor regardless of SES, although, the nature of PA may differ depending on SES. For example, those from lower SES are more likely to play football, whereas, those from higher SES are more likely to play rugby (Wheeler, 2011). However, research does seem to suggest that families from higher SES backgrounds are better positioned to facilitate and sustain several PA outcomes (compared to families from lower SES backgrounds) through having the economic, social and cultural capital to do so (Wheeler, 2011).

Key points:

- There was no difference in gender for VSA in childhood (boys = 78% and girls = 78%).
- 50% of participants IMS in childhood although there were gender differences with more boys (67%) taking part in IMS than girls (33%).
- Sports participation appeared to echo cultural-stereotypical perceptions of gender where boys identified with football and girls with dancing.
- Parents and close family seemed to play an important role in influencing the extent to which participants identified with their sport.

Out-of-school unstructured PA

During out-of-school, all participants reported hanging around with friends and taking part in some form of unstructured PA at some time during their childhoods. Some of these activities included AT-2 (defined in this study as walking during out-of-school - around the local area, to the shops, with friends, with family, and walking the dog) and AP-2 (defined in this study as out-of-school hours, hanging around or playing with friends e.g. back garden, local park, Astroturf, streets, fields or other).

AT-2. Over two thirds (67%) of participants (boys 67% and girls 67%) said they frequently went on long walks (AT-2) with their friends (Table 5.5), which, some claimed they would do for several hours at a time, on most days of the week, and at weekends. Some participants recalled walking aimlessly around the estates or fields near their homes whilst others said they went walking with a sense of purpose going to the shops or to visit a relative. The following participants commented on this:

> MP4: I spend a lot of time walking, I don't really have a reason for walking really…it is just a part your daily life, you must do it [walk] no matter how you are. I feel as if you have to go to places to get things done.

> FP8: We'd always like start of somewhere and we would just like walk, really walk everywhere. I just like to be outside [walking] than stuck in the house. I'd like to be out walking with my friends doing something other than in the house.

> FP10: I just went out with friends, and like there was nowhere for you to go so you just walked about anyway…from like four o'clock right the way to like ten o'clock at night.

> FP11: When I was younger I used to go down to the park and walk about with my friends…Just walking and talking and stuff. Normally, we'd go shopping and just up town, and just walk about.

FP12: I'd just go down to my friend's house and…I will take my dog a walk up the back fields. Me and my pals would walk for ages. We'd take a big walk up the roads and fields and all that. We'd sometimes walk to the shop and get sweeties and juice and then just keep walking and talking for ages. I'd also like to go on walks myself and listen to music and have a think over things.

MP16: It was just around our local area for a couple of hours. We just walked and spoke about stuff. I'd go with my friends (walking). I was always on the go, we'd never sit down.

Table 5.5 Percentage of participants participating in unstructured physical activities out-of-school during childhood

Physical Activity	Both (%)	Boys (%)	Girls (%)
AT-2	67	67	67
AP-2	89	78	100

Note. AT-2 = Active Travel; AP-2 = Active Play-2

AP-2. Most (89%) participants (boys 78% and girls 100%) said they participated in AP-2 out-of-school (Table 5.5). This was the most frequently reported for unstructured PA and included activities such as playing at the local park, kicking a ball, throwing Frisbee, and playing on the swings or obstacles. The following participants illustrated this:

FP12: So everybody would get together…there was big fields…we got to hide in those when the crops grew long… we would play tig and hide and seek. Just rolling about [in the fields]. As a child, using the imagination and making friends.

MP13: We could go onto the playground, but we weren't allowed inside the school. So, I used to go to the playground and play. There used to be monkey bars, I used to go across them, climb on the climbing frame, go on the swings. Just have fun. I used to do that all the time with Jamie. I would be out most of the day. I would be out most of the day just playing. I would get home [from primary school] around half-three, go out at five and not come back home till around seven or eight.

FP7: I went out with my friends and would be playing for at least two hours after school every night. I used to play at tig and we'd have races. We also played at hopscotch, stuff like that… and, went out with my friends and stuff

like physically playing in the streets or park for at least two hours after school every day.

FP10: We'd just play at the park, tig and stuff…the parks like a five-minute walk…and there's a big pitch of grass [for playing]…we'd be sent out for the day with a packed lunch box to play at the park. I think it's like a thing that every child does at that age [primary school age], just play in the park.

MP16: We'd [friends] play football in the park. We'd always play a game where you had to hit the ball of the wall and if you missed you were out. After that, we used to play tig or hide and seek in the streets and that…there were three or four people [friends] and you had to try and seek some people. We were always on the moving about and crawling to keep away from them.

Also, most participants said that during AP-2, they would hang around with friends, siblings and others in the local community, which some claimed they would do all year round even during the winter months. Some of the activities mentioned included tag, hide and seek, kirby, football, running through their neighbours' gardens, jumping over walls, and chap door run. Many comments were like the following:

FP10: I used to like play in the street, and play like tig and stuff, cos I had like loads of friends. We just used to do normal stuff like climbing and running and stuff like that.

FP12: The whole street would get together and play tig or hide and seek. When I was growing up all the people [other children] were the same age as us. Everybody would get together. There were five fields to go and play. So that was interesting. We got to hide in those [fields] when the crops were long.

FP8: I used to go running with my friends and go for bike rides and do other play stuff around the estates where we lived.

MP17: We'd get up to a bit of mischief. Just all the stuff that most people used to do. Jumping across the back of bins, and chap door run... throwing snow balls at the window and make sure you don't get caught…whether it was dark or not you would be out…I would get my dinner [after walking back from school] and usually it would be straight back out to muck about with my pals. We used to play everything. We used to jump over back gardens and there was…where I stayed there is a big set of woods that we'd play in…and in just in front of the wall there was a big piece of grass so we used to play football on that, or cycle on bikes. Loads of times we would just climb up on the wall and walk across the wall, hanging from the branches of the trees and everything like that.

MP18: We'd just play football in my street…there was a boy up the street who was a year younger than me, and a boy down the road from me as well who used to come out and play football in the street as well.

The present study findings show that 72.5% of boys and 83.5% of girls take part in regular amounts of unstructured activities out of school hours. This has been termed Active Play-2 and Active Travel-2, and is separate from travel to and from school (AT-1) and play in school hours (AP-1). It includes walking during out-of-school around the local area, to the shops, with friends, with family, and walking the dog, hanging around or playing with friends (e.g. back garden, local park, Astroturf, streets, fields or other).

Other studies using self-report methods to evaluate children's PA often do not capture the same variety of activities that are included in categorisations such as AP-2 and AT-2 (e.g., Currie et al., 2011). As such, these studies may not capture all of the activity undertaken throughout the day. However, interpretation of this must be cautious, as evidence suggests that self-report measures have been shown to overestimate PA (Hjorth, Chaput, Michaelsen, Astrup, Tetens, & Sjodin, 2013; Sallis & Saelens, 2000). Furthermore, studies that utilise other more objective measures of PA (e.g., accelerometers) do measure a broad scope of activity (including AT-2 and AP-2), but still highlight the low levels of PA participation, particularly in those from low SES backgrounds (Schnurr et al., 2017; Tudor-Locke, & Myers, 2001). It is also difficult to generalise these findings to the wider population of Scottish young people from low SES backgrounds, due to the demographics of the sample (e.g., participants were enrolled, by choice, into a school curriculum sports and recreational studies programme).

Nevertheless, while there are limitations to the methodology used in this study, using such methods does allow a greater understanding of the context in which PA may take place, which is an important element of understanding the nature of PA habits, and therefore may help to inform effective PA promotion interventions. As such, it would be sensible for future research to continue to utilise, and improve the way in which it captures the duration and intensity of PA, and also the type of PA and context in which it takes place.

As an example of the importance of context, Weir, Etelson, and Brand (2006) looked at the degree to which parents from inner city (low SES) and the suburbs (high SES), limited their children's outdoor PA because of concerns to do with neighbourhood safety. There findings suggest inner city children from lower SES backgrounds participated in less PA than those in the suburbs from higher SES, and that this was because inner city parents expressed greater anxiety about neighbourhood

safety than those parents from the suburbs. However, Weir et al. (2006) only report on parents and children from inner city low SES and suburban high SES backgrounds. The present study findings show that children from suburban lower SES backgrounds participated in regular amounts of PA in their neighbourhoods, which is similar to findings reported by Weir et al. (2006) concerning those from suburban high SES backgrounds. It seems that children from the suburbs regardless of SES, may well participate in higher levels of unstructured PA than those children living in the inner city, and that the reasons for this may well be to do with parents from the suburbs having less concerns over neighbourhood safety than parents from the inner city who may have greater concerns.

These findings provide further support to suggest that PA is accumulated through unstructured PA whether in-school, as highlighted earlier through AT-1, and AP-1, or out-of-school through AT-2 and AP-2. Schoeppe, Duncan, Badland, Oliver, and Curtis (2013) carried out a systematic review of children's PA and demonstrated that children given the freedom to play outdoors and travel actively without adult supervision accumulated more PA than those who do not. More recently, D'Haese, Van Dyck, De Bourdeaudhuij, Deforche, and Cardon (2015) found that AP contributes to levels of PA thus decreasing the time spent being sedentary.

The regular amounts of unstructured PA found in the present study is consistent with previous research indicating this is an important time when children have a high natural predisposition to engage in PA (Boreman & Riddoch, 2001). Previous research seems to suggest that early participation in PA (i.e., childhood and adolescence) predicts levels of participation in adulthood. For example, Telama et al. (2005) suggested that levels of PA in childhood and adolescence is a strong predictor of activity in adulthood. However, Telama et al. (2005) mostly looked at structured activities such as club sports and PE, and devoted little attention to other less structured activities such as AT or AP. Also, Aarts, Paulussen, and Schaalma (1997) found this period in early childhood is very important in promoting early habit formation in PA, which, also contributes towards continued participation in adolescence and adulthood (early habit formation and the subsequent implications on PA is discussed later in this chapter, p. 156). Loprinzi and Trost (2010) in their work found strong positive parental influence is crucial in facilitating the development of this predisposition towards ensuring long-term PA engagement.

Key points:

- Almost two thirds of boys and girls reported taking part in AT-2 in childhood (girls = 67% and boys = 67%).
- More girls reported taking part in AP-2 than boys in childhood (girls = 100% and boys = 78%).
- Due to sampling and self-report methodology, the interpretation of the high engagement in AP-2 and AT-2 in this study needs to be taken with caution.
- The context and accuracy of PA are both important factors, as such, more work is required to continue to improve the way in which the duration, intensity and the nature and context of PA is captured in an integrated fashion, particularly in young people from a low SES background.

Adolescence Stage

In-school structured PA

In accordance with current PA guidelines (Bromley et al., 2013), secondary school children are encouraged to participate in the PE curricula (i.e., two periods of MVPA twice per week) and as already mentioned, the new Curriculum for Excellence for Scotland 'expects schools to work towards the provision of at least two hours of good quality PE for every child, every week' (Scottish Government, 2014, p. 1). However, at the time the participants in the present study were at secondary school, their PE would have been based on the previous guidelines mentioned earlier, which recommended school aged children (aged 5-14) should participate in a minimum of one PE session per week (SE, 2004; Cavil, 2001). The present study acknowledged that participants would have experienced a transitional period of change (throughout secondary school) linked to PA guidelines, therefore, their recollections may not reflect current guidelines. All participants reported participating in a variety of PE led activities at some point during secondary school, which, mostly seemed to consist of blocks of core activities and included, swimming, football, basketball, netball, badminton, dancing, gymnastics, and athletics. This was illustrated by the following participants:

> FP5: There were blocks of PE activities…you'd have six weeks of swimming and then you'd have six weeks of basketball and then six weeks of badminton.

> MP4: I done PE throughout the five years, coming up six years at school and we done football, basketball, athletics, swimming and things like that.

> FP7: Through PE, I'd enjoy playing sports like football, netball, rugby, basketball and badminton.
>
> MP16: Well, in PE [secondary school] we done various sports like basketball, football, swimming, hockey…it was good. Because there were many sports you didn't get bored, it was always changing.

Some participants reported taking part in two sessions of PE during early secondary school (e.g., S1 and S2), which they said reduced to one session during S3 and S4. They mentioned the reason for this reduction in PE was to do with being given the choice of subjects (standard grade PE) during S3. Those choosing standard grade PE to participate in two or more hours of PE per week whereas those opting out from standard grade PE would participate in only one hour of PE per week. The following participants illustrated this:

> FP11: In first and second year I think it was two hours of PE a week and in third and fourth year we did one PE once a week. This was because I didn't want to do standard grade PE and so didn't have to do so much.
>
> FP3: In first and second year I think it was two hours of PE per week and then in third and fourth year we did PE once a week.
>
> FP5: In first and second year you don't get the choice what PE you want to do. In third and fourth year, we got the choice [Standard or core PE]. So if you weren't on standard PE in third and fourth year, you never got to pick it [the activities].
>
> FP7: In first year, I think we did two hours of PE a week and in second year we did one hour of PE a week. And then, from about third year I was doing between five and eight hours of PE a week [standard grade].

This finding is consistent with the work carried out by Inchley et al. (2008), reporting that most pupils in S1 and S2 (98.9% and 74.8%) participated in two periods of school PE per week. They also indicated that participation in PE steadily declined from S1 through to S4. Although the reasons for these declines were unclear, they pointed out that pupils could opt out from doing standard grade PE from S3 onwards, which, at the time of their study, would have been in line with SE (2004) guidelines. Inchley et al. (2008) also reported a proportion of pupils participated in five or more PE sessions per week in S3 and S4, which they presumed reflected those pupils are opting into standard grade PE (37.3% accounted for this option in S4).

While the secondary school curriculum facilitated reduced levels in some participants' PA in S3 and S4 (through pupils opting out), the findings from the present study also seems to suggest that reduced PA occurred through pupils deliberately avoiding PE particularly in S1 and S2. For example, most participants implied that at some point during secondary school PE, they felt highly self-conscious, or they knew of someone being self-conscious, and that this was magnified particularly during the swimming PE sessions. This is commented on as follows:

> FP5: In first and second year I just kept to myself. Like, I was pretty quiet, and the fact I just didn't want to do swimming. Like, a lot of girls felt the same. They just didn't want to go swimming with the boys. And I think it was maybe because we were scared in case they laughed.

> MP4: I feel if maybe people are a little bit too self-conscious about running about doing sports in PE [secondary school]. They don't feel confident doing it. Even just wearing shorts in class [PE class]. They don't feel confident doing it because of the way society is and the way people make fun or say they are not good [at sports in PE].

> FP7: One of my best friends doesn't enjoy sports or swimming in PE [secondary school PE] as much as I do. I think it's because she's less confident, so things like PE, she'd always feel self-conscious because you're in a mixed class [boys and girls]. She doesn't like being in PE with boys and I think that made it more difficult for her to take part.

This avoidance by pupils to participate in secondary school PE is discussed later in this chapter (pp. 145-157), exploring in more depth some of the underlying reasons adolescents choose to disengage from PE.

All participants reported that they were given the opportunity to attend the Sports Academy, which, was an after-school sports club set up by the school offering all pupils the opportunity to participate in sports. Pupils attending the 'sports academy' (after school sports clubs) appeared to participate once weekly in a variety of sport-based activities as commented below:

> FP7: I played basketball and netball during 'sports academy' and I did this once a week.

> FP6: In after school clubs ['sports academy'] I played football one week and basketball the next again week.

> FP8: Well, I done the netball club after school [‘sports academy’] which was running once or sometimes twice a week.

The above discussions suggest that the participants in the present study may have achieved the recommended schools PE guidelines (two x 60-minute PE sessions per week, Scottish Government, 2014) through participating in secondary school PE and the ‘sports academy’ activities. However, when considering the CMO PA recommendations (minimum of 60-minutes of MVPA up to several hours every day, DoH, 2011), pupils in the present study would not have achieved the recommended amounts required through PE alone.

Key points:

- Consistent with the research, all participants reported taking part in one or two PE sessions in secondary school per week.
- All the participants reported taking part in the school organised ‘sports academy’ at some point during secondary school.
- It seemed unlikely that the recommended PA guidelines (at least 60-minutes MVPA up to several hours every day, The Scottish Government, 2016) were achieved through secondary school PE and ‘sports academy’ alone.
- All of the participants reported feeling self-conscious at some point during secondary school.
- All the participants reported feeling self-conscious in secondary school, which for some participants led to them deliberately avoiding school PE (mostly swimming and team games).

In-school unstructured PA

Similar with the childhood stage during primary school, participants seemed to be physically active in other ways in secondary school other than through PE although this was limited to just walking to and from school (AT-1).

Table 5.6 Percentage of participants participating in unstructured physical activities in-school during childhood and adolescence

Physical Activity	Childhood			Adolescent		
	Both (%)	Boys (%)	Girls (%)	Both (%)	Boys (%)	Girls (%)
AT-1	84	67	100	73	78	67
AP-1	100	100	100	0	0	0

Note. Both = Boys and Girls; AT-1 = Active Travel-1; AP-1 = Active Play-1

AT-1. Almost three quarters (73%) of participants reported walking to and from school on most days of the week in adolescence (Table 5.6), which was a decline of 11% from during childhood (84%). However, when considering gender, girls' participation declined by a third from 100% in childhood to 67% in adolescence whereas boys' participation increased by 11% (67% up to 78%). The following participants comment below:

> MP4: I walked to school [secondary school] all the time. I'd sometimes walk to school with my friends and it was about 20 minutes to walk to school.
>
> FP5: Yeah, I did walk to school [secondary school] every day.
>
> MP9: I'd walk to school [secondary school] with friends. It's was just five minutes to walk to school. So, it's like you can nearly see my house from the school.
>
> FP10: Cos, like where I live, everything's like…our house is in the middle of everything, so the parks like 10-minute walk… the school [secondary school] was a 20-minute walk, and there's a big pitch of grass like just down from where I live and that was only a two-minute walk.
>
> MP15: Yes. I walked to school. It was a quarter of a mile away so it wasn't an effort to get there at all…I stayed where a few of my friends stayed. So, I would start walking to school [secondary school] and I would see two or three of my friends and I would catch up with them…as we got closer to school there would be more friends and you'd just all blend and chat and stuff and there would be a group of you and you would just go in at the bell [school bell].

Furthermore, some participants said it took longer to walk to secondary school compared to primary school. This was expressed by FP7 and FP11 as follows:

> FP7: I took me about 10 minutes to walk to primary school and about 20 minutes to walk to secondary school.
>
> FP11: Well I walked to secondary school and that was a longer walk than what primary was.

This finding contradicts the work carried out by Inchley et al. (2008) who reported pupils' participation in AT-1 declined below 50% (boys = 42.6% and girls = 44.5%) during secondary school. They highlighted that the reasons for this decline were strongly linked to secondary school pupils using public transport or cars to travel to and from school. However, as indicated earlier, Inchley et al. (2008) used a sample group mostly recruited from higher SES backgrounds, which, perhaps suggests this population had greater access to cars and public transport compared to those from lower SES backgrounds.

Findings from the present study suggest secondary school pupils accumulated higher levels of PA through AT-1 compared to some studies (e.g., Currie et al., 2011; 2015), which, like in primary school, was likely associated with location (i.e., suburban) and low SES. Perhaps these differences between the present study and previous studies (concerning accumulated PA through AT-1) are too generic and that participation rates differs from school to school, and is dependent on location. For example, in the present study, all the participants were from suburban lower SES backgrounds and appeared to participate in greater amounts of AT-1 compared to those school children from the inner city higher SES (Inchley et al., 2008).

AP-1. None of the participants reported taking part in AP-1 during secondary school break times, which, was a decline of 100% from during primary school when all pupils participated (Table 5.6). This finding contrasts Inchley et al. (2008), who although reported large declines in their work, also suggested that some pupils continued to participate in PA during break times throughout secondary school.

Key points:

- In contrast to previous research, none of the participants reported taking part in AP-1 in adolescence.
- Almost three quarters (73%) of participants reported taking part in AT-1 in adolescence which was a slight decline from in childhood (84% down to 73%).

- Girls reported less participation in AT-1 (67%) than boys (78%) in adolescence which was a decline from childhood (100% down to 67%) whereas boys' participation in AT-1 appeared to increase from 67% to 78%.
- Boys and girls in this study appeared to take part in higher levels of AT-1 than reported in some studies, which, may have been associated to them not having access to cars and public transport.

Out-of-school structured PA

Almost half (45%) of the participants reported taking part in VSA in adolescence (Table 5.7), which, is a decline of 33% from childhood (78% down to 45%). Boys' participation declined from childhood by 45% during adolescence (78% down to 33%), whereas, girls' participation declined by 22% (78% down to 56%). FP7 and MP4 commented on VSA in adolescence:

> FP7: When outside of school I still climbed two hours…probably climb six hours every week. Swim two hours every week. I'll go running three times a week for probably about 40 minutes at a time. On the odd occasion, go snowboarding.
>
> MP4: secondary school I have played … continued football, continued basketball, took up an interest in rugby and I took up an interest in athletics. I done PE throughout the five years, coming up six years, at school. And out with school probably still the same football, basketball, athletics, I was about to try rugby when I got my injury. Other than that, still played in the garden with my brothers, still the parks, occasionally go swimming, walk to and from school all the time, sometimes, two, three, four times a day. Go up town, walk around up town, things like that.

Table 5.7 Percentage of participants participating in structured physical activities out-of-school during childhood and adolescence

Physical Activity	Childhood			Adolescent		
	Both (%)	Boys (%)	Girls (%)	Both (%)	Boys (%)	Girls (%)
VSA	78	78	78	45	33	56
IMS	50	67	33	45	56	33

Note. Both = Boys and Girls; VSA = Various Structured Activities; ISM = Identified with a Main Sport

When looking at those participants 'identified with a main sport,' there is a slight decline of 5% from childhood (50%) to 45% in adolescence (Table 5.7). This decline is linked to gender variation, where boys declined by 11% from childhood (67% down to 56%) and girls remained the same as in childhood (33%).

Those participants 'identified with a main sport,' appeared less likely to drop out from participating in their sports than those pupils taking part in VSA, which, perhaps suggests that those participants ('identified with a main sport') had higher levels of motivation to participate than those taking part in VSA. Also, the same participants 'identified with a main sport' in adolescence implied that they identified with the same 'main sport' in childhood. MP18 and MP4 illustrated this:

> MP18: Just football [in secondary school]. I have only played football ever since I used to play football for Edinburgh South [club football team in childhood] when I was in primary… Just football. I enjoy it. It takes your mind off everything. When you start playing football you just concentrate on that. You don't think of anything else… I started to enjoy the swimming and started doing that quite often. But, football, I just wanted to play football and my dad wanted me to get into a team and get better. So, my dad pushed me to football… no, I am just focused on football since I was a child.

> MP4: In secondary school I continued to play football. Football sessions, my training sessions lasted maybe an hour and a half, maybe two hours depending on the time of the year. Then I played about two hours at the weekend doing games. So, for football, overall in a week I have probably played for six hours, seven hours when including casually with friends…I do play basketball and things outside school, but I don't spend as much time as I do playing football.

All the participants 'identified with a main sport' suggested that their parents (mostly one parent) were a strong influence throughout childhood and adolescence. This seemed to include high levels of support through transporting their children to and from venues, and also, through parents participating alongside their children (e.g., playing in the back garden and the park). This is illustrated by the following participants:

> MP4: The main influence would probably be my dad; as far back as I can remember he would take me to football training. Even if I wasn't at football training he [dad] would take me out in the back garden or in the park, kick a ball with me, throw it…tell me to kick it back to him. Just a general influence.

> MP9: I've got two trampolines out in my back garden at my mum's. We used to play on the trampoline and my mum always joined in. Like, because my

> mum had this wee hut thing and we used to just like play in the back garden and it used to be good. My dad used to like to get me into football when I was young, playing with me in the back garden and at the park and then. he just used to help me kick the ball about and that, so he just got me into football, and then I just started to like football from then.
>
> MP15: My mum used to always come and watch my football games and so did my big brother. My dad used to always take me walking and play football with me. Every week I seen him we used to go on massive walks, and it didn't matter where we went it was just great fun. We used to go to woods and stuff and the country park and even to this day my dad is always nagging at me for going on a big walk and that...He has got older and he has got more determined that he is going to walk even longer. My family is always doing something [activity]. Even my papa, he is always out doing something … he is wanting to sell his house and move so he can do loads of activities and stuff.

This finding is supported by Inchley et al. (2008). Although, when looking at genders differences across the stages and levels of parental influence (on children's general PA), Inchley et al. (2008, p. 8) reported that 'there was no gender difference in support from mothers during childhood but, in S2 to S4 boys reported higher levels of support from fathers than girls.' MP4 mentioned support by extended family (e.g., grandparents, uncle, and auntie) and described how they would travel long distances to watch him compete in sports.

> MP4: my dad and my granddad, all my parents and relatives, were always very encouraging for sports. And would take me and support me whenever possible. Even my uncle and auntie from other sides of the world, were coming over to support me whenever possible. I think that had an encouraging effect. Making me drive for more … more success really.

This finding seems to suggest family support is a fundamental element towards ensuring PA continues from childhood into adolescence, which, although described in a sporting context above (participants 'identified with a main sport'), likely includes other less sport orientated activities. This finding is consistent with the work carried out by Morrissey, Wenthe, Letuchy, Levy, and Janz (2012) who demonstrated that family is a major factor towards influencing continued participation in sport and PA in adolescence. They emphasised that the type of family support is essential suggesting that parental involvement in PA was just as important as watching or giving verbal support. Although, they did highlight that their study had limited representation from

low SES households. However, Humbert et al. (2006) in their investigation into SES and parent involvement in their children's PA, showed that young people from high and low SES considered their parents as being important for their participation in PA.

Key points:

- Participation in VSA declined from childhood into adolescence for boys (78% down to 33%) and girls (78% down to 56%).
- Boys IMS declined slightly from childhood into adolescence (67% down to 56%) whereas girls IMS remained the same at 33%.
- Those participants IMS in adolescence also identified with the same sport in childhood.
- Those participants reporting IMS in adolescence appeared to be more robust to declines in most types of PA.
- All participants reporting IMS mentioned family as an important influence.
- Regardless of SES, family support appeared to be important towards participation in structured sports types of PA.

Out-of-school unstructured PA

AT-2. Two thirds (67%) of participants reported participating in AT-2 in adolescence, which is the same as in childhood (67%). However, when looking at gender, girls' participation in AT-2 increased by 22% from childhood (67%) to 89% in adolescence whereas boys' participation decreased by 23% from childhood (67%) to 44% in adolescence (Table 5.8).

Table 5.8 Percentage of participants participating in unstructured physical activities out-of-school in childhood and adolescence

Physical Activity	Childhood			Adolescent		
	Both (%)	Boys (%)	Girls (%)	Both (%)	Boys (%)	Girls (%)
AT-2	67	67	67	67	44	89
AP-2	89	78	100	67	78	56

Note. Both = Boys' and Girls; AT-2 = Active Travel-2; AP-2 = Active Play-2

Some of the reasons participants reported taking part in AT-2 in adolescence were similar to childhood, and included being with friends, walking aimlessly around the local neighbourhood, or with purpose by going to the shops or to the Astroturf to kick a football. FP12 and FP11 commented on this:

> FP12: Me and my pals used to walk for ages [in adolescence] …we'd take a big walk up the road… We'd go to the shop and get sweeties and juice. And just then just keep walking and talking. You didn't realise the time. If you were talking … in conversation and it would take you anywhere… I like the fresh air. If you are having a hard day, you get out, you stretch your legs and you walk. It is like, no relaxing but you can … I like to take walks by myself. Put my music in and have a wee wander off somewhere.

> FP11: Me and my friends would normally go for big walks shopping and just up town, and just walk about. I mostly just do stuff [walking] after school, I just go walking about with my friends or sometime myself…I just think it [going walking] is because I am older and I don't really go to the park and play [in adolescence]. Me and my friends will go out walks. We will walk round the park like. Mostly just for some exercise.

Other reasons reported seemed to be linked with family circumstances and included, parents being separated or divorced. For some pupils, this involved regular visits to an estranged parent and included weekly walks that were described by some as being fun and lasting for long periods. MP15 illustrates this:

> MP15: My dad used to always take me walking. Every week I would go see him we used to go on massive walks, and it didn't matter where we went it was just great fun. We used to go to the woods and stuff and the country park.

AP-2. Two thirds (67%) of participants said they took part in play type activities (e.g., AP-2) out with the school environment in adolescence, which, is a decline of almost one quarter (22%) from during childhood (89%). The reason for this decline is that girls' participation reduced by almost half (44%) from childhood (100%) to 56% in adolescence (Table 5.8). Boys' participation remained the same during adolescence (78%) as in childhood (78%). When considering gender and the changes in PA behaviour in adolescence, it would appear many girls preferred walking over play activities compared to boys who continued to participate in play type activities. This finding may well be partly due to the way in which activities in the present study were

categorised i.e., mischievous activities (e.g., running through neighbours' gardens, ringing neighbours' door-bells and then running away), kicking a ball in the street or at the Astroturf were all categorised under AP-2. The following participants commented:

> MP17: Probably getting into a wee bit of mischief…just all the stuff that most people used to do. Jumping across the back of the bins and chap door run.
>
> MP16: I used to play football in the street with my pals.
>
> MP13: I used to go down to the Astro turf and play football.

The above discussions appear to suggest that lower SES Scottish adolescence may participate in a wider variety of unstructured PA than previously reported. This may be because most studies tend to report on young people from mixed SES. For example, Currie et al. (2011) and Inchley, et al. (2008) reported on adolescents from mostly mixed SES and mixed locations (e.g., inner city, urban and suburban) and not a specific SES or location as in the present study.

Key points:

- Two thirds (67%) of the participants in this study reported taking part in unstructured activities (i.e., AT-2 and AP-2) in adolescence, which, appears to be higher (for girls and boys) than previously reported in the literature.
- Girls' participation in AT-2 increased slightly in adolescence from childhood (67% up to 89%), whereas boys' participation decreased (67% down to 44%).
- Girls' participation in AP-2 decreased in adolescence from childhood (100% down to 56%), whereas boys' participation in AP-2 remained the same at 78%.
- Some of the key reasons reported by the participants for taking part in unstructured PA included visiting divorced parents (AT-2) and being with friends (AP-2).
- Unstructured PA in adolescent populations can be categorised into AT-2 and AP-2.
- Although PA is already reported as undertaken in urban street and rural grass environments, more work is required to capture, more accurately, the patterns of PA particularly in adolescent populations from low SES.

Early Adulthood Stage

In-school structured PA

Unlike the previous stages (childhood and adolescence), pupils in the early adulthood stage although in secondary school (S5), were legal adults. As pointed out earlier in this study, the early adulthood stage emerged from the data as when young people (aged 16) in Scotland are legally consenting adults (Age of Legal Capacity [Scotland], Act, 1991). Therefore, attendance at school was by choice rather than having to attend as they previously experienced (SE, 2004). Also, S5 pupils chose their school curriculum subjects, which unlike in previous years (S1 to S4), meant they were not required to attend PE.

In the present study, all of the participants interviewed were enrolled onto a sport and recreational studies programme, which, was an S5 curriculum subject at their school. This subject in the curriculum seemed to enable pupils to choose from a variety of PA, which although included a choice of sports and recreational activities, also included opportunities for pupils to take on a degree of responsibility in assisting teachers with younger pupils PE classes. FP5 illustrates this below:

> I picked sport and recreation this year…we are teaching primary sevens and younger ones PE, so we have to learn how to teach them…you got to do whatever you wanted. You could walk, play table tennis, dance, yoga, do stretches. So, you had a choice of everything you wanted to do.

Although some participants picked sport over the more recreational based PA, others appeared to prefer the less sport-orientated activities. For example, participants said they would walk around the Astroturf following a training programme (of sorts), which included following a set distance and improving previous best times. MP13 illustrates this:

> Mr X [school teacher] said that if you go 4 times around the Astroturf that is a mile. And I realised I had gone around 12 times, so that was 3 miles…I will do PE, I will do walking… I quite like doing it, beating my own record.

These findings suggest that S5 pupils have greater autonomy during PE than previously experienced during S1 to S4, which, previous research has indicated can lead to improved levels of participation through increased self-determined behaviour (Deci

& Ryan, 1985; Ryan & Deci, 2002). Self-determination is discussed later in this chapter (pp. 151-152).

Key points:

- In contrast to adolescence, in early adulthood all of the participants reported taking part in secondary school PE during S5 through choice (greater autonomy) rather than feeling that they had to.
- All of the participants said that they chose their PE activities in S5 compared early secondary school (S1 to S3) where they felt they had to participate in compulsory PE.
- Some of the participants said that they chose to participate in less structured PE activities in S5 such as walking around the athletics track.

In-school unstructured PA

AP-1. As highlighted earlier, none of the participants reported taking part in AP-1 in adolescence (Table 5.9), which, seemed to be a significant decline from childhood when all pupils (100%) reported taking part. This complete dropout from AP-1 remained at 0% throughout adolescence and into early adulthood.

Table 5.9 Percentage of participants participating in unstructured physical activities in-school during all key stages

	Childhood Stage			Adolescent Stage			Early Adult		
PA	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls
AT-1	84	67	100	73	78	67	84	89	78
AP-1	100	100	100	0	0	0	0	0	0

Note. Both = Boys and Girls; PA = Physical Activity; Both = Boys and Girls; AT-1 = Active Travel-1; AP-1 = Active Play-1

AT-1. Most pupils (84%) reported walking to and from school (AT-1) in early adulthood (Table 5.9), which is an increase of 11% from adolescence (73%) and the same as in childhood (84%). When looking at gender, almost all boys (89%) participated in AT-1 in early adulthood, which was an increase of 11% from

adolescence (78%) and 22% from childhood (67%). Over three quarters (78%) of girls participated in AT-1 in early adulthood, which, like the boys, was an increase of 11% from adolescence (67%). However, girls' participation in early adulthood was significantly less than during childhood when all girls participated in AT-1. This is illustrated as follows:

> FP10: I walk to school, I walk back from school, and at lunchtime, I walk to my grans and back for lunch.
>
> MP4: I walk to and from school all the time [currently], sometimes, two, three, four times a day. During breaks I'll go up town, walk around up town, things like that… Walking to town in between classes [at school], walking home.
>
> FP7: Walk to school, run home sometimes. Yup, I still in S5, walk to school and even run home sometimes for ma lunch.

Some of the pupils implied that the regularity and routine of AT-1 in S5 was different from in early secondary school (S1 to S4). FP3 illustrated this:

> During study leave…we'd text our friends and see if they wanted to come out for a walk [in between classes or during study periods in S5] and we'd just go a big walk. We didn't do this before because we weren't allowed.

These findings appear to suggest that participants in the present study (S5 pupils) participated in higher levels of AT-1 than previously reported. Research appears to be limited when looking at older Scottish pupils PA (including AT-1), with most studies (mostly self-report) only reporting up to S4 (Currie et al., 2011; Inchley et al., 2008).

When looking at trends in AT-1 throughout all stages (Figure 5.1), participants (both represents boys and girls) participation in AT-1 declines from childhood into adolescence (84% down to 73%) and then increases towards early adulthood (73% up to 84%). However, when looking at gender, although this trend appears to be similar for girls, albeit a sharper dip during adolescence (100% down to 67%), boys' participation steadily increases throughout all stages reaching 89% in early adulthood compared to 78% observed in girls. Furthermore, while girls' participation is higher than boys in childhood, boys' participation is slightly greater than girls' in adolescence and in early adulthood.

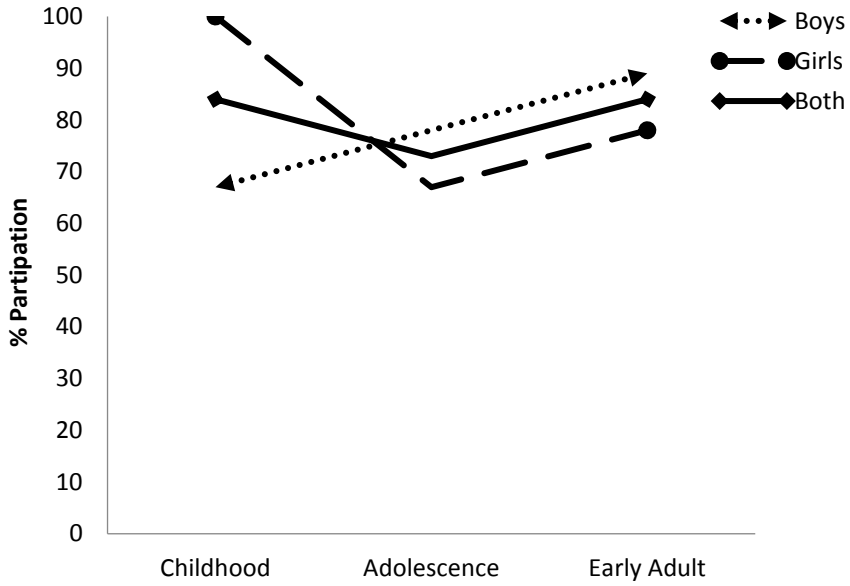


Figure 5.1 Trends in participants AT-1 throughout all key stages (both = boys and girls)

Key points:

- Similar to adolescence, none of the participants reported taking in AP-1 in early adulthood.
- Participation in AT-1 increased slightly for girls and boys in adolescence (67% up to 78% and 78% up to 89% respectively).
- Trends in AT-1 indicate that boys' participation increased steadily throughout the development stages (childhood, adolescence and early adulthood), whereas girls' participation declined sharply in adolescence and then picked up again in early adulthood.

Out-of-school structured PA

In early adulthood, 50% of participants reported taking part in VSA (Table 5.10), which is a slight increase of 6% from adolescence (44%), however, is still less than in childhood (78%). When considering gender, this slight increase in participants' participation is because of increased boys' participation from 33% in adolescence to 44% during adulthood, whereas girls' participation seems to have remained the same at

56%. This is illustrated by the following participants:

> MP4: I still participate in football, athletics and basketball. So, for football, overall in a week I have probably played for six hours, seven hours when including casually with friends. Athletics is …I train a lot, I train maybe four or five days a week, about an hour and a half two hours. And I have competitions every month. They last an hour or so, two hours. In extreme circumstances, they can last a whole day. Other than football and athletics … I do play basketball and things outside school, but I don't spend as much time. I spend maybe 45 minutes, an hour, a week playing basketball and rugby.

> FP7: Right now, I'm involved in in the netball, the basketball, badminton, swimming, and I do a lot of running outside of school just in my free time, to run, and swimming and I play a lot of basketball and I rock-climb. I do them to keep fit and because I enjoy doing them and because I think it's important to do that… When you're studying at school, it's important to have downtime and it's a good way to keep healthy as well so you're not sort of just sitting there when you get in from school, sitting on the couch doing nothing. You need to keep your brain active, and by doing all that exercise you will be. It'll help you learn better as well and it means you can burn off any excess energy so you're not coming into school the next day sort of hyper, and it'll allow you to focus in the classroom better.

Table 5.10 Percentage of participants participating in structured physical activities out-of-school during all key stages

	Childhood Stage			Adolescent Stage			Early Adult		
PA	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls
VSA	78	78	78	44	33	56	50	44	56
IMS	50	67	33	45	56	33	45	56	33

Note. PA = Physical Activity; Both = Boys and Girls; VSA = Various Structured Activities; IMS = Identified with a Main Sport

When looking at trends in VSA throughout the stages (Figure 5.2), participants (both) participation declines from childhood into adolescence (78% down to 44%) before increasing again into early adulthood (50%). While boys' and girls' participation declines in adolescence, boys decline the most (78% down to 33%) compared to girls (78% down to 56%). Although boys' participation picks up again towards early adulthood, it doesn't reach the levels observed in girls which remain the same as in adolescence (56%). This finding is consistent with previous research (e.g.,

Bromley et al., 2013; Currie, 2011; Corbett et al., 2012) showing increased declines (and drop out over time) in out-of-school sports participation by boys and girls. A more recent study by Moller et al. (2014) looked at levels of structured PA during in, and out of school and found that those participating in higher levels of structured PA in-school, did not participate in as much out-of-school.

Explanation for these findings might be as follows: over the last decade, Scottish Government strategies (already mentioned) have led to increased levels of structured PA in-school. Which, based on the work carried out by Moller et al. (2008), may well provide some explanation for the findings in the present study and in previous research suggesting declines in out-of-school sports activities. For example, young people might be taking part in increased amounts of in-school PE or other structured activities such as after school sports clubs leading to decreased participation out-of-school.

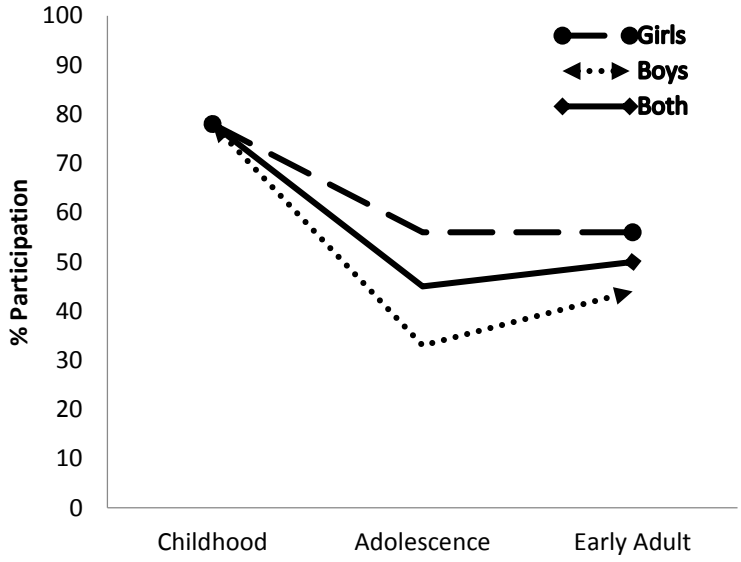


Figure 5.2 Trends in participants VSA throughout all key stages (both = girls and boys)

When looking at those participants 'identified with a main sport,' just under half (45%) reported participating during early adulthood (Table 5.10), which is the same as during adolescence, however, is a slight decline of 5% from during childhood (50% down to 45%). Boys' and girls' participation is unchanged from adolescence (56% and 33%). This is demonstrated as follows:

FP6: I have got a basketball trip coming up. It is away at Inverness. So, I am going away there for three days. I am playing against Dunbar and one again Innerwick so I have got three games. And some free time. I really like playing basketball.

MP16: Yes, I play football for Edinburgh South. I play football [currently] outside the school for a team [Edinburgh South], sometimes I go to the gym, I go running in my spare time, I do quite a lot of PE and even just walking to school, walk to lunch, so it is not as if I am sitting about doing nothing. When I went to Morocco last year, we went for a hike for three or four hours, that was tiring …But, I play football most of the time.

MP9: I play football now nearly every day… mostly at the Astroturf. Sometimes Soccer City. Just this, like it's an indoor football pitch 'cos it… it's just been built a few months ago. I usually go up there sometimes. It's not… it's not much to get in. I really want to be playing football for a good team.

When looking at trends in participants 'identified with a main sport' throughout the stages (Figure 5.3), participation is highest during childhood (50%). However, this appears to dip slightly into adolescence (50% down to 45%) levelling out at 45% into early adulthood. Also, when looking at gender, boys' 'Identified with a Main Sport' is highest in childhood (67%), which then declines during adolescence (56%), although levels out at 56% into early adulthood, whereas, girls remain the same at 33% throughout all the stages.

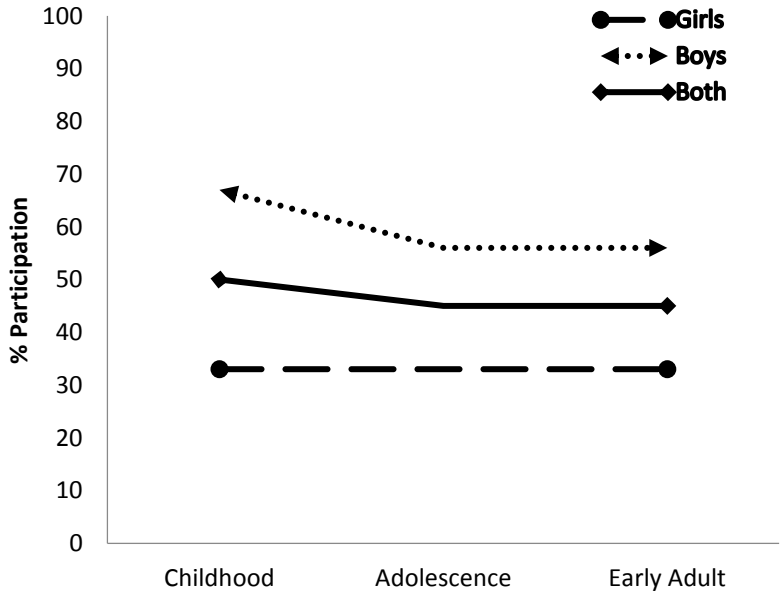


Figure 5.3 Trends in participants IMS throughout all key stages (both = boys and girls)

Key points:

- Boys participating in VSA in early adulthood increased slightly from adolescence (33% up to 44%), whereas girls' participation in VSA remained the same at 56%.
- Boys' and girls' IMS remained the same in early adulthood as from during adolescence (boys = 56%; girls = 33%).
- Trends in VSA indicate that girls' participation was higher than boys' in adolescence (56%) and in early adulthood (56%), whereas boys' participation in VSA took a sharp drop to 33% during adolescence although picked up slightly in early adulthood (33% up to 44%).
- Trends in IMS indicate that boys' participation declined slightly from childhood (67% down to 56%) and then remained the same at 56% in adolescence and adulthood, whereas girls' participation remained constant throughout all of the stages at 33%.

Out-of-school unstructured PA

AT-2. Just over three quarters (78%) of participants reported participating in AT-2 in early adulthood (Table 5.11), which is a slight increase of 11% from adolescence and childhood when participation was 67%. Girls' participation was the same as in adolescence (89%), therefore, remained at 22% less than in childhood, whereas boys' participation increased by 22% from adolescence (45%), which, was the same as during childhood (45%). MP4 and FP12 commented when asked about current physical activities:

> MP4: I spend a lot of time walking; I don't really have a reason for walking really, it's just part of daily life. Generally, I am always trying to keep fit. Always walking. Every single day of the year unless physically impossible for me… I feel as if there are things that make doing physical exercise not possible, or improbable, for them to do. I feel as if people could walk more. A lot of people will drive or get a bus to somewhere that they could walk to. But … I think it is a personal preference as to what you want to.
>
> FP12: I do walking. But, I don't do clubs anymore. I go walking. My friends and I will go on a big walk. Go up a big hill. There is a big hill where we live…we go up there some days even now.

In addition to the more recreational AT-2, some mentioned having part-time jobs such as a paper round or waitressing, which they said involved standing and

walking (active mobility) sometimes for many hours several days a week. The following participants commented:

> MP4: I have a paper round; I walk round that, half an hour each day. So yes, just generally I do walking after school and my paper round.
>
> FP5: Well (pause) well, I would class me working as a physical activity, because I'm a waitress so I'm constantly on my feet, constantly walking around, constantly holding plates and stuff, so I would class that as a physical activity because I'm on my feet for hours on end especially at the weekends.
>
> MP13: I have my papers [paper round]. That will get me out for about an hour and a half. I was to put myself on a scale of one to ten, I would put myself … I wouldn't put myself incredibly low, but I would put myself about a three or four because my main activities of exercise would be my paper round, which I mainly walk around my block and some of my neighbours' blocks, delivering papers.

Table 5.11 Percentage of participants in unstructured physical activities out-of-school during all key stages

	Childhood Stage			Adolescent Stage			Early Adult		
PA	Both	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls
AT-2	67	67	67	67	45	89	78	67	89
AP-2	89	78	100	67	78	56	17	33	0

Note. Both = Boys and Girls; PA = Physical Activity; Both = Boys and Girls; AT-2 = Active Travel-2; AP-2 = Active Play-2

When looking trends in AT-2 throughout the stages (Figure 5.4), participants participation is the same in childhood and adolescence (67%), although, appeared to increase in early adulthood (67% up to 78%). When looking at gender, boys' and girls' participation is the same in childhood (67%). Girls' participation increased in adolescence (67% up to 89%), which compared to boys, is a difference of 44% when boys' participation decreases (67% down to 45%). Boys' participation improved in early adulthood (45% up to 67%), although, not to the same level observed in girls, which remained the same as in adolescence at 89%.

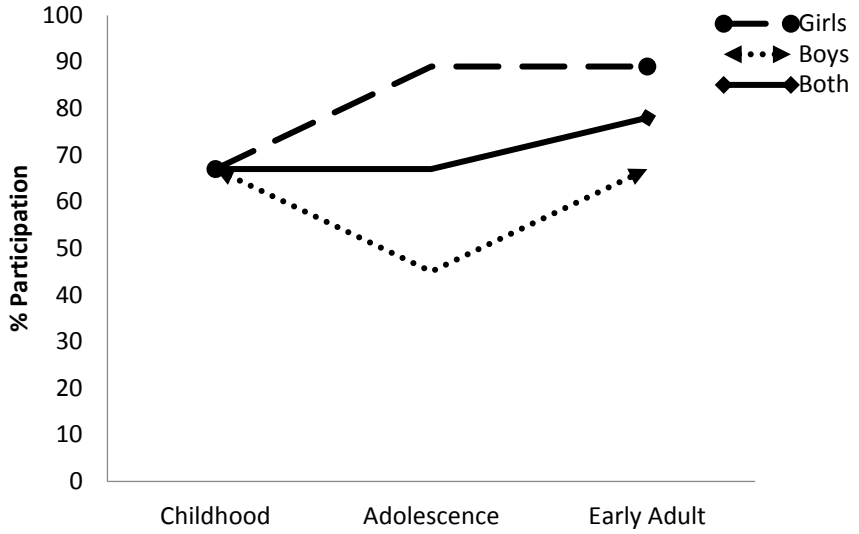


Figure 5.4 Trends in participants AT-2 throughout all key stages (both = boys and girls)

AP-2. Less than a quarter (17%) of participants seemed to participate in AP-2 in early adulthood (Table 5.11). This finding was a decline of exactly half (50%) from adolescence when 67% reported taking part in AP-2, and almost three quarters from childhood when 89% reported taking part. Only boys (33%) reported participating in AP-2 (all at the AstroTurf) compared to no girls (0%) during this stage. The reasons for this may be associated with girls perceiving themselves as being more grown up, and that participation in AP-2 (e.g., hanging about with friends at the park or in the streets) was not appropriate. For some participants, this perception seemed to begin during early adolescence and is illustrated by MP9 below:

> Don't know, it was different like because in like primary seven you could still play in the back garden, but then when you got to first year, it'd just be weird if you played [in secondary school] …well, not weird, but I just stopped playing.

However, boys reported kicking a football around with friends on most days of the week at the park or the AstroTurf. MP9 and MP16 illustrated this:

> MP9: Just football. That's all I do. Like, the past week, every day I've been out playing football. Last night I went to my friends…we went to the park and just played football.

> MP16: I play football now nearly every day…at the Astroturf. Me and my pals just go to the Astroturf or kick a ball in the streets. We set up goals and just play all day. It's great fun.

When looking at trends in AP-2 throughout the stages (Figure 5.5), participation declines throughout all stages from 100%, although sharper declines are observed from adolescence into early adulthood (67% down to 17%). However, girls' participation continually declines from 100% observed in childhood to no participation (0%) whatsoever in early adulthood. Boys' participation remains the same during childhood and adolescence at 78% although, declines to 33% in early adulthood.

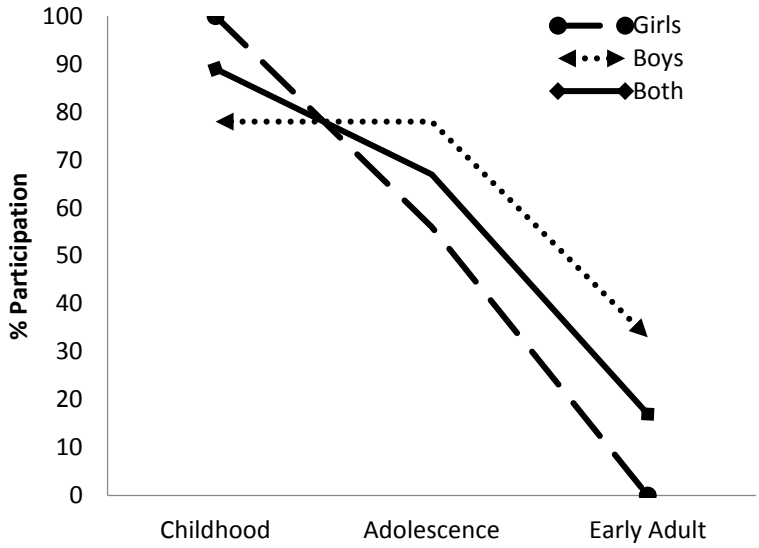


Figure 5.5 Trends in participants AP-2 throughout all key stages (both = boys and girls)

The above discussions seem to suggest young adults from suburban low SES participate in high levels of unstructured PA (i.e., AT-2 and AP-2) out-of-school. But, as pointed out earlier, this period in S5 (early adulthood) appears to be underreported and what little information there is seems to not include unstructured activities out-of-school (i.e., AT-2 and AP-2).

Key points:

- Over three quarters (78%) of participants reported taking part in AT-2 in early adulthood (S5), which appears to be underreported in the literature for this age group (16 to 17 years).

- Participation in AT-2 increased for boys from adolescence into early adulthood (45% up to 67%), although remained the same for girls at 89%.
- Only one third (33%) of the participants reported taking part in AP-2 in early adulthood.
- Participation in AP-2 declined for boys from adolescence into early adulthood (78% down to 33%) although for girls, none reported taking part in AP-2 in early adulthood.
- Trends in AT-2 indicate that boys' participation dropped in adolescence from childhood (67% down to 45%) and then increased again to 67% in early adulthood. Whereas, girls' participation increased in adolescence from childhood (67% up to 89%) and then remained the same at 67% in early childhood.
- Trends in AP-2 indicate participation decreased throughout all stages for both genders, although girls' participation declined the most from 100% in childhood to 56% in adolescence (whereas boys' participation remained the same at 78%) and then drops to 0% participation in early adulthood. Boys' participation also drops in early adulthood to 33%.

Macro Theme-2: Two Transitions Separated Three Key Stages in Youths Development Impacting on PA

As highlighted from Theme-1 (the nature of PA in Scottish youths throughout key development stages), young people's PA is complex. In the present study, this complexity emerged as being intertwined between three stages of development (i.e., childhood stage, adolescence stage, and early adulthood stage). It also emerged that these three stages were overlapped by two transitions, which were identified as 1) first transition, the move from primary to secondary school and a change in status from childhood to adolescence; and 2) second transition, the change in legal capacity, which in Scotland is aged 16 years (Age of Legal Capacity [Scotland], Act, 1991), and a change in status from adolescences to early adulthood.

While it is documented by academic and physical educationist (Brooke, Corder, Griffin, & van Sluijs, 2014; Irvin & Mullins, 2000) that the first transition is important during a young person's development, the information concerning when young people transfer from being children to adults appears limited. The present study described this as the second transition and that this was an important time when participants

adaptations to motivation influenced their behaviours and attitudes to PA.

First Transition from Primary to Secondary School

*Pre-transition***.** There was a period prior to the first transition when most participants recalled having pre-first transition anxieties, which for some seemed to be a particularly unsettling time. For example, some participants reported concerns about going to secondary school while they were still at primary school. MP18 illustrated this as follows:

> MP18: I was scared to go to secondary school because I didn't know what it would be like. I haven't got any older brothers or sisters so I wasn't sure what it was going to be like. Football has like helped me. If you play football you start to ken folk from other teams and know a lot more folk that will help me when I leave school and if I go to college and I recognise folk from somewhere else.

This finding is consistent with recent research carried out by Waters, Lester, and Cross (2012) demonstrating that pupils experienced pre-transition concerns in moving to secondary school from primary school, and that these concerns were to do with the anticipation of social and structural changes at the new school (i.e., secondary school). Other participants reported that these concerns were to do with the anticipation of the new environment and keeping existing friends. MP15 comments:

> It was a big jump because it is scary. You were thinking about are you going to keep your friends, who you have been with and that. It is your own comfort zone, your class in primary, because you are with them from primary one to primary seven. And you know them all well, and your friends, you know all their names and stuff. And when you come up to high school it gets scary… you are lucky if you have got three of those people in your home room and you have got all these different people from different primary schools.

A study by Pratt and George (2005) found that peer support was an important factor during this period and it is when children's thoughts and decisions are very much focussed on re-establishing their identities and friendships.

Post-transition. Waters, Lester, Wenden, and Cross (2012, p. 62) also found that the majority (70%) of pupils had a positive experience after the transition into secondary with some describing the transition as 'easy or very easy.' This is supported in the present study where it emerged that 12 out of 18 participants (67%) appeared to have an easy transition into secondary school reporting mostly positive and enjoyable

experiences during PE. MP16 illustrated this as follows:

> I really enjoyed PE during secondary school. Well in first year PE [secondary school] we done different sports like basketball, football, swimming, hockey … it was good like, we didn't get bored. Because there was so many sports you didn't get bored of it, it was always changing. There was always new stuff. You were always learning. It was great cause even if you didn't bring your kit for one PE lesson you could just walk, walk around the astro turf, so you were always keeping moving, not just sitting.

However, the remaining six pupils (33%) seemed to have an uneasy transition into secondary school reporting mostly negative experiences during PE, particularly in S1 and S2, with most recalling an unwillingness to participate and others recalling disengagement from PE altogether. FP5 and MP13 illustrated this in secondary school PE providing their reason for not wanting to participate:

> FP5: I didn't want to do PE [secondary school]. I didn't like it so I never took part in PE. Well, I never took part in first and second year PE… In first and second year, it was the boys that prevented me from not doing swimming and not taking part, and then… Yeah, it was the way that all the girls felt. They were all just shy and didn't want to do anything with the boys. And then they were just rough, so rough with each other like during basketball and stuff, so we never took part in that either.

> MP13: I didn't like PE so I stopped doing PE in S1. Because when I went there was also second and third years every now and then, they were doing stuff, and they were quite big and I can remember I used to get hassled a lot because I am ginger. So, there used to be 'ah ginger!' and all that. And then I can remember, I stopped doing PE in first year, I stopped bringing my kit because I didn't want to do it…If you forget to bring a pencil to other classes, they [teachers] give you a pencil. But with PE they [teachers] don't give you PE kit, so if I didn't bring my PE kit I would have to sit in PE doing nothing. I hated it but it stopped [sitting out of PE] me from feeling bad when people were calling me names.

This is consistent with the work carried out by Subramaniam and Silverman (2002), who suggested that pupils having already developed negative attitudes to school PE continued to do so because they perceive the school curriculum as a barrier to enjoyment. This finding is supported in the present study, where it appeared that participants reporting negative experiences during early secondary school, therefore an uneasy transition, continued to have negative experiences throughout secondary school PE. MP17 illustrated this:

> To be honest, fourth and fifth year I didn't do PE much, I got quite lazy and just could not be bothered with it. I just didn't seem to be enjoying it or anything to do with PE.

It seems that some young people have anxieties at different stages throughout their developments for a variety of reasons, although, sometimes many of these anxieties are acceptable, and that it is perhaps just part of the natural process of development to sometimes struggle particularly for those from lower SES backgrounds. Research carried out in the late 1980s by Simmons and Blythe (1987) explains that transitional problems were not unexpected, since during these transitional periods pupil go through several developmental changes including the onset of puberty, educational change, environmental, and social changes. Subramaniam, and Silverman (2002) went on to explain that those pupils having positive attitudes reported that the curriculum had improved after the first transition.

These findings are echoed by Wigfield et al. (1991) and more recently by Brooke, Corder, Griffin, and Sluijs (2014). Both studies highlighted that there were issues to do with pupils' participation in school PE during the first transition from primary to secondary school. Further, Evangelou et al. (2008) in their work found a significant number of children from low SES backgrounds had problems adapting to the new routines and that for many children, settling into their new secondary school was difficult.

In the present study, it emerged that those participants' experiencing an easy transition into secondary school PE also reported taking part in regular and varied out-of-school structured activities (e.g., VSA and IMS) throughout their childhoods. In contrast, those participants' experiencing an uneasy transition appeared to have participated in very little structured activities during childhood, and in most instances, seemed to have dropped out altogether towards later childhood.

Pupils reporting an easy transition

Those participants' experiencing an easy transition into secondary school PE appeared to have mostly positive experiences suggesting they had an interest and desire to try out a variety of new sports in secondary school PE. MP4 and FP6 comment:

> MP4: In secondary school (PE) I have played football, basketball, took up an interest in rugby and I took up an interest in Athletics. I did PE during all

> secondary school. With the help of our PE teacher we done all sorts of sports. I quite like that, I think I will be quite good at that' so you give it a go and football and basketball were two of them. I sort of carried it through hoping to progress. I always have ambitions to become the best that I can be.
>
> FP6: In first year I done seven hours of PE. So, I did school PE [secondary PE] and did the sports academy after school. So, in PE I done volleyball, basketball, dance, football, hockey, badminton and other activities. My PE teacher in primary Mr 'X' I was good at basketball in primary and he was like 'X" you should do basketball in high school.' He was looking at me every time I took a three pointer or a set up. He said I was good at doing that.

Also, those same participants reported enjoyment towards secondary school PE suggesting that they might have had feelings of perceived autonomy, competence, and relatedness towards participating in PE (and the school 'sports academy'). Therefore, intrinsically motivated to participate. The following participants illustrate this:

> FP8: I had netball as a new activity in PE, and I liked doing it, I really enjoyed it.
>
> FP6: The first day at high school I decided to join the school basketball team and I also joined the netball team.
>
> MP4: During secondary, PE you meet new people and they have the same sort of ambitions and the same intentions as you do…you have your teammates, and you get close to your teammates and you will want to go out, you get invited to go out places.
>
> FP10: I felt good doing basketball because my PE teacher in primary school said I was good at basketball and he said, 'Samantha, you should do basketball in high school.'

For some participants, these reasons linked to socialisation seemed to include being accepted into the cool group and achieved by demonstrating their abilities through sport (during PE). In other words, showing others (other pupils and perhaps teachers) with similar interests and skills that they were competent. MP14 illustrates this:

> You wanted to get accepted more…you always wanted to be part of the cool group. You wanted to be the best at football, the best at basketball and stuff like that. You wanted to be known for being good at something. You always wanted to show that you were good at activities to the teachers as well as the other pupils.

These findings are consistent with the SDT framework, which suggests that those participants' experiencing an easy transition in this study are intrinsically motivated (Deci, Koestner, & Ryan, 2001) to take part in school PE. Further, SDT goes on to explain that a person's intrinsic motivation will improve (or remain high) so long as their basic psychological needs (a sub-theory of SDT) are satisfied (i.e., competence, autonomy, and relatedness). However, if any of these basic psychological needs are thwarted, then SDT suggests that levels of intrinsic motivation would subsequently decline.

In the present study, those pupils experiencing an easy transition seemed to have reported factors related to them having a choice of activities, which, according to cognitive evaluation theory (a sub-theory of SDT), enhanced their levels of intrinsic motivation (Ryan & Deci, 2000). For example, cognitive evaluation theory posits that by feeling in control and having a sense of choice will enhance levels of intrinsic motivation (Mandigo, Nicholas, & Holt, 2000). This is demonstrated by FP6 ('the first day at high school I decided to join the school basketball team and I also joined the netball team'), who by her own choice, decided to join the basketball and netball team on the first day of school.

Pupils reporting an uneasy transition

Those participants' experiencing an uneasy transition into secondary school PE, seemed to have mostly negative experiences and seemed to show little interest in participating in school PE altogether. This is discussed next highlighting some of the types of activities pupils reported during PE sessions. All the female participants reported that they were unhappy at having to participate in swimming PE sessions with the boys. FP5 commented:

> I think it was because we were doing swimming with the boys. I mean swimming was a huge issue. That was one of the biggest issues, and like tons of the girls never done it. And I never took part in it because I don't like swimming. You must swim with the boys as well, and a lot of girls never took part because of that. But other classes, they were getting separated, so the girls would do swimming and the boys would do swimming at a different time. But our class never got that so I never took part in swimming. Because you were with the boys and a lot of girls are awfully insecure and stuff in front of the boys…So, I never took part in any swimming at all.

Similar findings were evident in a study by Knowles, Niven, and Fawkner (2011). They showed that secondary school girls felt uncomfortable when taking part in swimming during PE when boys were present. Some explanation for these finding can be found in the research. For example, James (2000) investigated secondary school girls' swimming experiences and found that the main concern girls reported was to do with feelings of embarrassment and presentation of self.

In the present study, although most participants reported embarrassment and presentation of self, caused them to avoid swimming during school PE, some participants also reported that by not having 'nice clothes' was a reason for them to avoid other PE sessions such as in the gym or outside on the sports pitches. FP10 illustrated this:

> It could be as well…if your mum can't afford the nicest PE kit then, well; your attitude could be like "I'll just not do PE. I don't have as nice as stuff as them". Get picked on and stuff, which is… which happens a lot like. If somebody walks in and they've not got the nicest designer cloths (PE kit), then it's guaranteed to get pointed out.

Other participants reported personal appearance as a reason for non-participation in PE. FP10 commented:

> I think in high school, for females it could be like personal appearance because obviously, we sweat (during PE) and our hair will get in a mess, and that'll maybe like, oh no, I'm not doing PE. I think in high school… like, for females it could be like personal appearance because you're, like, obviously, you'll sweat and your hair will go all messy, and that'll maybe be like 'Oh no, I'm not doing that". It could be as well, for boys and girls, if your mum can't afford the nicest PE kit then, well, your attitude could be like 'I'll just not do PE. I don't have as nice as stuff as them.' Get picked on and stuff, which is… which happens a lot like. If somebody walks in and they've not got the nicest designer clothes, then it's guaranteed to get pointed out.

Others reported reasons to do with personal appearance were to do with body weight. FP8 commented:

> Mostly just like people like slagging other people for being bigger sizes [overweight] and stuff, and I was like 'I don't want that to happen to me.' So that… it really… just people getting like bullied and stuff for their weight, and

> that put me off. I'd rather stick to the size that I feel comfortable at than like get bullied and stuff.

These finding are consistent with Inchley et al. (2008) who suggested adolescent girls are affected by high degrees of self-consciousness (self-esteem) during secondary school PE. More recently, a study carried out by Casey et al. (2014) showed that adolescent girls were particularly vulnerable to declines in PA and that declines were directly associated with body image and self-consciousness. Inchley et al. (2011) in their study, implied only female adolescents were affected by higher degrees of self-consciousness and that adolescent males were not. In the present study, some boys reported avoiding PE during secondary school and that the reasons for this was due to being 'hassled' and called names by other pupils. This is illustrated by MP13:

> I used to get hassled a lot because I'm ginger, and then I can remember I stopped doing PE. I stopped bringing my PE kit to school PE because I didn't want to do it. The [other pupils] were mainly just saying that I was ginger. And back in primary I could say my own name cause of speech problems, I used to say 'Doe' and some people through high school remembered that and the used to call me 'Doe.' 'Come here Doe. Try and run Doe.'

Others reported being taunted 'from the side lines' during PE sessions. MP15 illustrated this:

> There were many pupils during PE who were getting abuse from other pupils on the side lines for being not so good at the sports and not to the standards of the sporty pupils.

Some reported feeling excluded as a reason for not participating in school PE: MP14 commented:

> They wouldn't include me in the games. And then if I messed up they would say it was my fault. They would pass me the ball and I would throw it and the person wouldn't catch it and then they would blame me for it and make me feel that I was no good at it.

These reports, which are closely associated with bullying, are supported by Currie et al. (2011) who found that one in ten (9%) adolescents in Scotland (aged 11-

15) reported being bullied two or three times a month at secondary school. Other reasons reported in the present study for non-participation, were to do with classmates 'being too rough' during the more physical type PE activities. This is illustrated by FP11 and FP3

> FP11: They were just too rough (the boys), so rough with each other like during basketball and stuff, so we never took part in that either.
>
> FP3: In primary school none of the pupils were rough. Whereas, when we came up to secondary school it seemed like everybody wanted to kill each other in sports during PE.

However, not all female participants in the present study reported 'being rough' as a reason for not taking part in secondary school PE, there were some girls reporting to really enjoy participating along with the boys during PE sessions. This was described by FP10:

> Some of the girls like to go full on, like tackling and stuff like football, like getting really involved…Like boys are boys, they love playing football so playing them like you get a better game. It's the same with rugby as well…Like, obviously with rugby you have to take like people out and get really dirty and stuff… And then once you're put with a, like in a team of boys, it's…like more fun because you get to play properly.

These findings are consistent with SDT, suggesting that participants experiencing an uneasy transition had high levels of extrinsic motivation to participate in secondary school PE (i.e., the compulsory curriculum), and in some instances, were completely non-self-determined, therefore amotivated to participate (Hagger & Chatzisarantis, 2008, p. 87). Deci and Ryan (1985) introduced this concept of amotivation, which represents the absence of motivation. Amotivated individuals do not perceive contingencies between their behaviours and desired outcomes (Deci & Ryan, 2000). Therefore, in the context of the present study, it seems that amotivated participants may have decided not to continue participating in PE because of a low sense of achievement, being bullied, and picked on by other pupils, which, would have likely contributed to their low self-esteem.

According to SDT, those amotivated behaviours might have occurred because of

participant's basic psychological needs not being satisfied. For example, 1) low sense of perceived autonomy resulting from participants having limited choice of PE activities through having to participate in blocks of core activities dictated by the school curriculum, 2) low sense of perceived competence resulting from participants having to participate in sports activities (e.g., during PE) but not having the necessary skills to do so, and 3) poor relationships with peer group through being bullied and picked on during PE sessions. Amotivation can occur when engagement in an activity is not valued and can result in feelings of incompetence (Ryan & Deci, 2000). When activities are compulsory such as PE, then those already amotivated are more likely to suffer negative consequences including efforts to avoid attendance, low involvement, and limited intention to participate in future activities (Ntoumanis, Pensgaard, Martin, & Pipe, 2004).

So far, this section has looked at participants' experiences during the first transition linked to the more structured PA associated with secondary school PE. However, when looking at less structured PA (e.g., AP-1), it was highlighted earlier that all the participants completely disengaged from AP-1 on entering secondary school (p. 123). This finding highlights that aspects of participant's PA behaviours are influenced by their high sense of self, which is further facilitated by the school environment they find themselves forced into, which for some pupils is a barrier preventing them from participating. In the present study, this heightened sense of 'self' reported by participants while in school, was not reported during out-of-school where it seemed that most of the participants' (12 out of 18) took part in unstructured activities (i.e., AP-2) regardless of whether they experienced an easy or uneasy transition. MP4 and MP16 comment below:

> MP14: I still play in the back garden and in the streets with my brothers and some of my friends.
>
> MP16: I met a lot of my friends in secondary school so I went quite further away from my home than I would to meet up with them for a muck around [playing]. It was good that there were lots of us but it wasn't very good if I forgot something in my house and I had to nip back for it, it was quite a bus journey away. It was good meeting a lot of new people and seeing what they done in their spare time. It was just like talking to each other, chatting, playing football, and hanging around with them and playing around in the park.

Others reported disengagement from participating in AP-2 altogether. FP9 commented:

> In primary seven you could still play in the back garden, but then when you got to first year in secondary school, it'd be weird if you played…well, not weird, but I just stopped playing in my back garden and in my front garden. I just stopped playing when I went to secondary school.

Those declines were not just isolated to PA. Wigfield et al. (1991) demonstrated that there were declines in young people's academic activities as they moved from childhood into adolescence, and what's more, they found that these declines were linked to many transitions (e.g., physiological, psychological, and environmental).

Key points:

- Most participants (13 of 18) reported feeling anxious about going to secondary school while they were still at primary school.
- Although most participants (12 of 18) reported having an easy transition into secondary school, there were some (6 of 18) reporting an uneasy transition.
- Pupils having an easy transition into secondary school demonstrated strong psychological profiles suggesting that their basic psychological needs were satisfied (e.g., competence, autonomy, and relatedness), compared to those having an uneasy transition.
- Reasons for those participants' experiencing uneasy transitions (linked with PE) were associated with self-consciousness (e.g., sweating, hair, and body weight), being bullied and humiliated by their peers.
- Some of the girls reported that they enjoyed participating in secondary school PE alongside the boys.

Second Transition from Adolescence into Early Adulthood

As highlighted earlier, the second transition was identified from the literature as a change in a young Scottish person's age of legal capacity (i.e., aged 16). In the present study, this change in age also signified as a shift in participant's status from adolescence to early adulthood. Participants in early adulthood (S5) volunteered for secondary school curriculum PE (sport and recreational studies programme). FP5 comments as follows:

> I picked sport and recreational studies this year, which is PE in S5 and S6. But, like everybody took part in that as well, and I quite enjoyed it so I picked sport and recreational studies [school PE in S5 and S6]. And I was wanting to pick sport and recreational studies in fourth year, but I couldn't… So, I've picked it this year. So, and I'm quite good in PE in fifth year and at bringing my kit because there are different activities that I wanted to do.

Most participants appeared to have had positive experiences from taking part in school sports and recreational studies including those previously reporting negative experiences during, and post the first transition. For example, FP5 who experienced an uneasy first transition, illustrated this below:

> Well, you do sport and stuff and you do the theory side as well…we get to teach primary sevens and younger pupils PE, so we learn how to teach them. So, we're doing what we're going to teach them, and its good fun.

Also, participants seemed to have greater choice of activity during sport and recreational studies that also seemed to result in participants having fun. FP5 described this:

> You got a double period of PE during S5, and you got to do whatever you wanted. You could walk, play table tennis, dance, and yoga, do stretches. So, we had lots of choice of everything you wanted to do…in the small gym, in the big hall, and outside…so there was lots of room to do stuff. So, I did that, I took part in that…everybody took part and really enjoyed PE…in fifth year I brought in my kit.

FP5 commented on making a conscious effort to bring her PE kit to school suggesting she wanted to take part in school PE. This contrasted with before the second transition, when FP5 avoided PE by not bringing in her PE kit. For some participants, the consequences of their experiences during the first transition led them to develop strategies to avoid PE. The strategy reported by one participant was to not bring in their PE kit. Subsequently, due to the apparent school policy at the time, pupils not wearing the appropriate PE kit were not permitted to participate. MP13 illustrated this strategy:

> If you forgot to bring a pencil to other classes, they (the teachers) give you a pencil. But with PE they don't give you PE kit, so if I didn't bring my PE kit I wouldn't have to do PE.

The SDT framework supports this change in the attitudes and behaviours of the participants (i.e., taking part in school curriculum PE). SDT might describe that these changes were because of improved levels of intrinsic motivation through the satisfaction of participant's basic psychological needs (Deci & Ryan, 2001). For example, 1) participants chose to participate in school PE and the activities in which to participate, therefore, improving their sense of perceived autonomy; 2) participants chose activities they felt comfortable doing, therefore, not threatening their competence; and 3) the school curriculum (therefore the teachers) viewed participants as adults, thus improved levels of relatedness.

Dismore and Bailey (2010) identified several factors affecting children's attitudes towards PE following the first transition, which, included issues to do with social interaction amongst peers, and that for children already experiencing negative feelings towards PE, the subject was perceived to be more challenging. Also, Dishmore and Bailey (2010) reported that children's attitudes towards PE either remained the same or improved following the transition. Although aspects of their study were unclear (e.g., participant's SES), their findings suggest that a person's previous experiences and previously formed attitudes and habits, are important factors in predicting not just future participation levels in PE, but also, in PA during adulthood. However, Dismore and Bailey (2010) only reported on school PE, and not on the other less structured PA (e.g. active travel), which, in the present study, emerged as a possible contribution towards recommended PA guidelines (least 60-minutes MVPA up to several hours every day, The Scottish Government, 2016).

The findings by Dishmore and Bailey (2010) are in part, supported in the present study, where it was found that participants having positive experiences in PA in childhood and adolescence, appeared to develop strong habits and positive attitudes leading to their continued participation in early adulthood. Participants reporting negative PA experiences in childhood and adolescence, although not motivated to participate in the same PA reported by those having more positive experiences (e.g., sport), appeared to willingly take part in the unstructured activities offered in school PE in S5 (e.g., walking and running around the athletics track). This improved and more positive approach to participate in PA may have occurred through the early formation of habits in childhood and early adolescence through participating in unstructured activities such as AT-1.

Key points:

- All of the participants volunteered to participate in secondary school PE in year five (S5), even those reporting to have had previous negative experiences.
- In S5, participants' attitudes and behaviours towards school PE appeared to be more positive compared to earlier (S1 to S4).

Summary and Conclusions

The purpose of this study was to investigate through qualitative research techniques Scottish youth's (currently attending a secondary school in a low SES catchment area) PA experiences across their childhood and adolescent development stages. By studying their experiences, in this way, a much richer and more in-depth understanding of the nature of PA in young people (from a low SES perspective) from within a Scottish context was achieved.

In the present study, findings and concepts emerged as two main macro themes. Theme-1: The nature of Scottish youths PA throughout key development stages, and Theme-2: Two transitions separated three key stages in young people's development impacting on PA. Theme-1 showed that participants' experiences in PA emerged during three key development stages which were the childhood, adolescent, and early adulthood stages. While childhood and adolescent stages are well documented in Scotland (Education Scotland, 2014), the early adulthood stage identified in the present study emerged as a stage of development not found in previous literature, therefore, a new finding.

Throughout these three development stages two PA domains emerged as in, and out-of-school. Also, a variety of types of PA emerged from the data which in the present study were categorised as structured and unstructured PA. While these categorisations are not new, and in fact are frequently referred to in the existing research (DoH, 2011; BHF, 2015), what emerged from the present study, as a new concept, was the merging of domains and types of PA which were grouped as follows:

- In-school structured PA (e.g., school PE)
- In-school unstructured PA (e.g., AT-1 and AP-1)
- Out-of-school structured PA (e.g., organised sport and youth clubs)

- Out-of-school unstructured PA (e.g., AT-2 and AP-2)

Existing categorisations, described in the literature as specific forms of PA including active travel (AT) and active play (AP) (Currie, et al., 2015; Inchley et al., 2008), were sub-divided in the present study to describe in more detail young people's contextual experiences throughout the three development stages. These sub-divided categorisations emerged as active travel-1 (AT-1), walking and running to and from school; active travel-2 (AT-2), walking and running out-of-school (e.g., in the local neighbourhood); active play-1 (AP-1), in-school unstructured activities (e.g., in the designated play areas during break times); and active play-2 (AP-2), out-of-school unstructured activities (e.g., playing with friends in the local streets, at the local park, and the Astroturf). These sub-divided categorisations are shown as integrated into the classifications highlighted above. Also, two additional (both structured) categories emerged as various structured activities (VSA) and identified with a main sport (IMS).
In line with recommendations from Tremblay et al. (2014), these findings help to extend the already used definitions of PA (i.e., additional categorisations), and they also suggest that the variety of different environments in which PA is performed by Scottish school aged young people may be underrepresented in much of the self-report literature. While research utilising more objective forms of PA measurement (e.g., Accelerometers) capture activity within a broad variety of PA domains, they do not shed light on the nature and context of that activity. Given the methodological limitations apparent in the literature (Schnurr et al., 2017), it would be sensible for future research to continue to use a combination of measures and improve the way in which it captures the duration, intensity, type and context of PA in an integrated fashion.

When looking at gender and PA across all three development stages, the present study found that, 1) most of the participants walked to and from school (AT-1) throughout all of the stages; 2) none of the participants took part in AP-1 activities in secondary school (i.e., post transition from primary to secondary school); 3) although during childhood participation levels were the same for both genders in VSA (girls = 78% and boys = 78%), more girls than boys continued to participate in VSA throughout adolescence and early adulthood; and 4) more boys 'identified with a main sport' than girls throughout all stages, although girls remained constant throughout all stages (33%) compared to boys where less were observed post childhood (from 67% down to 56%)

and remained at 56% into early adulthood. When considering PA in the broader context (i.e., structured and unstructured), these findings are consistent with the current research (e.g., unstructured and structured) (Currie et al., 2011; 2015; Inchley et al., 2008). However, when reporting gender differences, research consistently reports that girls are less active than boys (Currie et al., 2008; 2011; 2015; Nelson et al., 2006; Inchley et al., 2008). This difference between boys' and girls' participation was not shown in the present study, nor in study one, which reported on young people's club activity session.

The present study showed that boys and girls participated in the similar amounts of AT-1 throughout all three stages. Although, girls' participation appeared to increase slightly in adolescence (from 67% up to 89%) compared to boys' which decreased slightly (from 67% down to 45%), and although girls' participation remained the same in early adulthood (89%), boys' participation returned to what it was in childhood (from 45% up to 67%). However, the present study only included young people from lower SES backgrounds (choosing to participate in school PE), whereas, other research mostly looks at mixed SES with a more representative sample. Therefore, to better reflect the PA patterns in young people, it is recommended that future studies should focus more on low and high SES separately rather mixed (BHF, 2015; Currie et al, 2015; Scottish Government, 2015).

The present study identified two key transitions the first of which (transition from primary to secondary school) is well documented in the literature (Brooke, Corder, Griffin, & van Sluijs, 2014; Irvin & Mullins, 2000). However, the second transition, not mentioned in existing literature, emerged in the present study as when young people become legal adults (Age of Legal Capacity [Scotland], Act, 1991). This finding became apparent where participants in the present study appeared to be given more responsibilities such as choice of activities and supporting teachers in teaching younger pupils during PE.

During the first transition period, it was found that all the participants felt anxious prior to the transition. Although, once in secondary school most participants seemed to have positive experiences in PE which were related to them feeling competent, having good relations with their peers and having fun. In contrast, those participants not having a positive transition seemed to be more self-conscious (about their appearance, weight and competences in their performances) about participating in PE and claimed to have been victims of bullying. This is highlighted in the literature

suggesting secondary school pupils particularly females have experienced problems in school PE, which, are associated with high levels of self-consciousness and bullying (Brooke, Corder, Griffin, & van Sluijs, 2014; Irvin & Mullins, 2000; Currie, 2011; Inchley et al., 2008; Waters et al., 2012). In the present study, participants' experiencing an easy transition into secondary school reported taking part in more out-of-school structured activities (i.e., VSA and IMS) throughout their childhoods than those experiencing uneasy transitions. This finding is partly supported by Dishmore and Bailey (2010) suggesting previous experiences, previously formulated attitudes, and habits contribute towards future and continued participation through improved perceived competence and interest in school PE. These findings highlight the influences these two key transitions can have on young people's participation in PA in secondary school PE, and that determinants of motivation are important factors influencing individual levels of participation. In the present study, previous PA experiences in childhood appeared to contribute towards levels of participation adding further to the concept that competence, habits, attitudes, and behaviours are all important factors that influencing individual levels of PA participation.

Secondary school PE is a vital factor towards developing young people's attitudes and behaviours towards, not only participation in PA, but also as an important role in the promotion of their health and wellbeing (Scottish Government, 2015). School PE is compulsory; therefore, every school aged youngster is legally expected to participate (CfE, The Scottish Government, 2015). Nevertheless, as found in the present study, and in the literature (Waters et al., 2012), there are those young people avoiding school PE for reasons to do with self-consciousness, bullying, and other psychological factors that influence their motivation to participate.

Limitations to this Study

One of the main limitations to this present study was linked to the population selected. Although the participants in this study met the criteria, there were restrictions preventing research carried out on certain areas which would have provided additional and useful information. For example, all the participants were enrolled (volunteered) onto the sport and recreation school PE programme indicating they were motivated to participate in some form or type of PA, therefore, they were not sedentary.

While, it would have been useful to interview young people living sedentary lifestyles (e.g., enrolled on other academic subjects within the school), this was not

possible at the selected school because the teacher assisting in this study was the head of the PE department, therefore, only had the authority to facilitate pupils enrolled onto the PE programme. By interviewing young people leading sedentary lifestyles would have likely provided a valuable and different insight into some of the issues attitudes and behaviours towards participation in PA. However, one of the challenges faced with sedentary young people in a study using interviews specifically investigating PA, is to do with their recruitment. In other words, sedentary individuals by the very nature of their lifestyle are less likely to volunteer for a study of this nature (Smith & Biddle, 2008).

Another limitation was linked to the time taken to complete the research and the venue in which the research was conducted. Due to the school curriculum, the researcher was only permitted to interview participants on Tuesdays afternoons from 2pm till 3:30pm, therefore, only one interview per week was achieved. This combined with busy curriculum periods such as study and exam weeks along with annual holidays meant interviews were conducted over nine months. While the overall duration was not considered to influence the research results, the time taken to complete the collection of data meant the study took longer to complete than anticipated. The time allocated to conduct the interview created pressure on the interviewer to ensure the interview was completed in the time allocated. Although for most interviews this time restriction was not an issue, on one occasion, the interview was cut short when the school bell rang while the participant was still talking.

Finally, similar to study one and other studies using subjective approaches, because this was a reflective investigation covering participants' experiences extending back over ten years, the information provided by the participants was limited by, for example, reliability of the data (e.g., memory recall, Razavi, 2001). Ideally, studies (e.g., longitudinal studies) working with young people at different stages of their development would improve reliability. However, while not impossible, this type of study (e.g., longitudinal studies) has many challenges such as the time it would take to run a longitudinal study and the many ethical considerations to do with working with young people.

Conclusion

The present study focused on a sector of the Scottish population (i.e., school-aged females and males from lower SES suburban secondary school enrolled onto S5

recreational studies programme). The findings, add original contribution supporting and adding to the existing research by providing further insight into the nature of PA young people within a Scottish context.

This study found that school aged young people from lower SES are participating in regular PA through unstructured activities (i.e., AT-1 and AP-2). While not original, this finding helps to provide a better understanding of 'the nature of young people's PA in a Scottish context' by capturing in more detail, patterns of activity. This finding adds to the previous literature which has suggested that better clarity and definition are required for young people's unstructured PA (Tremblay et al., 2014). However, caution is recommended for this finding because of the nature of the study sample (i.e., the participants chose to participate in school PE).

Also, PA in childhood seems to be an important factor for participation in adolescence. For example, the present study showed that those young people having less experience in structured sports-based activities in adolescence are more likely to have problems (e.g., low self-esteem) in school PE than those young people having more experience.

The present study has demonstrated that the nature of school PE takes a principal part in the development of young people's attitudes and behaviours towards PA participation particularly during key transition periods (i.e., 'primary to secondary school' and 'adolescence to early adulthood'). This finding is important because the research suggests that schools have a role towards facilitating not only MVPA, but also in providing young people with opportunities to experience various sports, and providing positive health and wellbeing outcomes. Importantly, for many young people particularly those from less affluent families, school PE may be the only opportunity for them to participate in structured sport-based activities. School PE is meant to provide all pupils with the opportunities to discover, experience, and engage in a range of curriculum-based activities which for some young people, may not be available to them out-of-the-school environment (e.g., those young people from less affluent families). However, while some young people embrace school PE, others seem to perceive school PE as threatening (e.g., through being self-conscious), subsequently leading them to avoid and even drop-out from participation altogether through problems linked to relatedness, competence, and autonomy (Ryan & Deci, 2002).

To add further value to this thesis, and crucially, inform more on the phenomenon that is the nature of PA in young people, it is vital to investigate PA from

a different perspective, which, will help in better understanding the multi-faceted complexities of PA in young people. In this thesis (study three), volunteer qualified PE teachers were recruited because they have undergone a selection and education that enables them to work with young people in a PA setting. Also, PE teachers will have experience and knowledge in the delivery of curriculum PE, worked with and observed young people through the two transitional stages (identified in study two), and worked with school aged children from different families and SES backgrounds. But, PE teachers are the facilitators of their school PE programme, and as such, are more likely to have a bias, therefore, a narrow viewpoint about that programme (i.e., school PE practices and procedures) and less likely to have a wider grasp of curriculum policy matters that impact on schools PE.

The present study showed that some pupils avoided school PE (mainly secondary school PE) and that some of their reasons highlighted were related to the transition from primary to secondary school, feeling self-conscious, and being bullied. Therefore, it is important to investigate further the reasons why young people feel this way and to determine the extent to which school PE is responsible. To achieve this, the next study will include qualified Scottish PE teachers (not currently working in schools) with a broad knowledge on curriculum policy matters (i.e., university teaching fellows and lecturers), therefore, positioned to take a more comprehensive outlook about procedures and practices within school PE.

Therefore, the next chapter (study three) sets out to investigate this by utilizing qualified Scottish PE teachers knowledgeable on policy issues and in the development of future school PE teachers. Key areas for investigation include, 1) the nature of young people's PA within a Scottish context, 2) school PE as a facilitator of PA, 3) key transition points during young people's development, and 4) policy related to the provision of PA within Scottish schools PE.

CHAPTER SIX – Study Three

Study three: To investigate using qualitative research, the nature of physical activity (PA) in young people and associated motivational influences within a Scottish context, from the perspective of six qualified Scottish physical education (PE) teachers, knowledgeable on policy issues and active in the development of future teachers.

Introduction

This chapter sets out to further 'investigate the nature of PA in young people within a Scottish context' using qualitative enquiry to examine through the experiences of those with expertise in working with young people.

Study two investigated lower socio-economic status (SES) Scottish youths' PA experiences throughout key development stages (i.e., childhood, adolescence, and the newly identified early adulthood stage). This investigation was achieved using a qualitative approach and provided a richer and more in-depth understanding of the nature of PA in young people within a Scottish context. Key recommendations arising from this study included the need to further 'investigate the nature of PA in young people within a Scottish context' (including the implications of PE on moderate to vigorous physical activity [MVPA] recommended guidelines), school PE as a facilitator of PA, important transitions points during young people's development, and policy related to the provision of PA within schools PE.

To begin with, the next section provides an overview of the purpose and aims of school PE in Scotland considering also, PE as a facilitator of MVPA and then a brief look at the way in which policy (through the curriculum for excellence) sets the landscape towards improving Scottish young people's health and wellbeing through participation in school PE.

School PE in Scotland

Schools have been identified as key environments for young people to achieve some level of PA throughout the day, which is normally provided through structured activity such as curriculum PE and unstructured activity such as active travel to and from school and play activities during breaks (Stratton, Fairclough, & Ridgers 2008; study two).

The purpose of PE varies between countries, although the aims are broadly the

same and mostly include the development of physical attributes (e.g., cardio vascular fitness), social skills (e.g., communication with others), cognitive abilities (e.g., attribution of knowledge), and psychological factors (e.g., self-efficacy), which, are all used to help young people engage in PA outside of school and throughout their lifetimes (Qualifications and Curriculums Authority, 2007; National Association for Sport and Physical Education, 2004; Association for Physical Education, 2008).

In the UK children are expected to be appropriately active during school PE which the Association for Physical Education (APE, Trudeau, & Shephard, 2008) set as a target of 50% duration for every PE lesson. In Scotland, as well as the aims mentioned above, school PE also includes the concept of children's basic movement skills, or competences, which the National Physical Activity Task Force deemed as an important contribution for continued participation stating, 'basic movement skills or competence support all our physical activity in later life' (Scottish Executive, 2004, p. 14). Jess, Dewar, and Fraser, (2004) defined basic movement skills as follows:

> The ability to consistently perform basic movements in a technically efficient, adaptable and creative manner and then apply these in different games, sports, dance and other contexts (p. 23).

Previous research has reported basic movement skills as an important contribution towards the development of young people's PA competences and is fundamental for continued participation throughout primary and secondary PE (Jess & Collins, 2003; Seefeldt, & Haubenstrickler, 1987). This was emphasised by the Scottish Executive (2004) as follows:

> Without the basic movement skills, pupils will be excluded from participation in many activities, or may find their enjoyment compromised. Therefore, the development of skills is fundamental to continuing involvement and full participation in physical education (p. 27).

However, while school PE is an important venue towards facilitating PA attributes, it is also considered very important towards young people achieving recommended MVPA guidelines (at least 60-minutes MVPA up to several hours every day, The Scottish Government, 2016). Indeed, most studies include MVPA

accumulated through school PE sessions when accounting for youngsters recommended guidelines (Currie et al., 2011; 2015). Schools PE is looked at next as a facilitator of MVPA and its contribution towards young people's recommended PA guidelines.

PE as a Facilitator of MVPA Guidelines in Scotland

As highlighted in previous chapters, in Scotland young people should be accumulating at least 60-minutes of MVPA up to several hours every day (The Scottish Government, 2016), which the National Institute for Health and Clinical Excellence (NICE, 2009) recommends should be accumulated in bouts throughout the day. However, research continues to report that young people are not achieving these recommended guidelines and that PA gradually declines throughout childhood and adolescence. Although, sharp declines in PA have been found to increase for mostly girls between primary and secondary school (Inchley, Kirby, & Currie, 2008; Pate et al., 2005). More recently, the Health Behaviour in School Aged Children (HBSC, 2014) survey in Scotland reported less than one in five (18%) young people in Scotland achieved the recommended MVPA guidelines (Currie et al., 2015).

Evidence suggests that levels of MVPA varies between schools. For example, a study looking at primary school PE found that only 18-minutes of MVPA was achieved in one week contributing to only five percent of overall MVPA requirements (Sallis et al., 1997), and in secondary schools in Finland it was found that pupils achieved 29.9% (boys = 33.6% and girls = 26.2%) of their weekly MVPA (Gråstén, Watt, Hagger, Jaakkola, and Liukkonen, 2015). This higher MVPA in Finland schools may be related to the strong philosophy around formative assessment in the earlier years of secondary school which has been shown to improve PE participation (Yli-Piipari, 2014). More recently, research conducted in Australia by Sutherland et al. (2016) reported on young people's MVPA and vigorous activity (VA) from disadvantaged schools. They showed that young people spent 39% in MVPA and 10% in VA, which, was less than those youngsters from urban schools. They also suggested that part of the reason for low MVPA (and VA) was that teachers required more classroom and administrative management time due to poorer behaviour by the pupils.

Studies looking at single lessons in primary school PE found that pupils participated in less than the recommended 50% of MVPA per lesson. For example, Warburton and Woods (1996) determined a single 60-minute lesson of primary school PE rarely achieves more than ten-minutes (16.6%) of MVPA per session. Other studies

have reported children only spent 9.5% of the primary school PE lesson engaged in MVPA (Rani Das, 2015; Wood & Hall, 2015). However, Mersh, and Fairclough (2010) reported better results in primary school PE with over 50% (59.7% of boys and 46.1% of girls) achieving MVPA during each lesson. Fairclough and Stratton, (2005) conducted a review of 40 studies which assessed PA during middle and high school PE and found that students engaged in MVPA for 27% to 47% in class time.

These findings clearly suggest that school(s) PE is not achieving the recommended PA guidelines and that PE sessions facilitate very little MVPA. Yet, the policy in Scotland (The Scottish Government, 2012) as part of its commitment to get young people more active, continues to ensure a minimum of two hours of PE per week (Scottish Executive, 2004), which, based on the evidence highlighted above (and from study two, pp. 121-124), is not an effective strategy in achieving increased MVPA. Perhaps an important point to note, is that other research highlights that outcomes associated to the increased time allocated for PE in Scotland are less about fitness and more about the contribution that PE can have on pupil's health and well-being (MacLean, Mulholland, Gray, & Horrell, 2015). The policy concerning young people's PA delivered through school PE, which in Scotland is delivered through the curriculum for excellence, is looked at next.

The Curriculum for Excellence for Scotland.

The Curriculum for Excellence (CfE) in Scotland (The Scottish Government, 2015) has been tailored to the needs of young people (aged 3-18 years) and professes to being a 'coherent curriculum' providing Scottish young people with the knowledge, skills, and attributes required for 21st century life. Also, Scotland's CfE has an important role in the promotion of children's health and wellbeing (MacLean, Mullholland, Gray, & Horrell, 2015), which includes as part of its principles and practice remit the provision of PA, therefore, states that the contribution of physical education, physical activity and sport (PEPAS) to health and wellbeing is as follows:

- Regular physical activity is essential for good health. Physical education should inspire and challenge children and young people to experience the joy of movement, to develop positive attitudes both individually and as part of a group and to enhance their quality of life through active living. This will give children and young people an important foundation for participation in experiences in physical activities and sport and in preparation for a healthy and fulfilling lifestyle. Children and young people will participate in and enjoy physical

activity and sport, in addition to planned physical education sessions, at break times and lunchtimes, during travel and beyond the school day. Outdoor learning can contribute to physical activity and enhance learning in different areas of the curriculum.

- Taken together, the experiences and outcomes in physical education, physical activity and sport aim to establish the pattern of daily physical activity which, research has shown, is most likely to lead to sustained physical activity in adult life (p. 6).

While Scotland's CfE stipulates PEPAS (see Appendix 6.1) as an important contribution towards the development of young people's attributes and qualities through PE such as those to succeed in sport and continued participation in PA, it also recognises the importance of achieving those by developing strong links with the wider community such as community clubs.

The provision of PE supports the idea that PA is important for all the reasons previously highlighted including the importance of participation during the early years towards health and wellbeing (including into adulthood), and that school PE play an important role in facilitating this. The evidence presented in the literature and study two show that while PE facilitates these benefits for some pupils, for others it facilitates problems, which, can then lead pupils to disengage from school PE altogether (Waters et al., 2012). The Scottish policies for school PE as a provider of MVPA are not clear. For example, the Scottish Government's (2012) strategy to improve young people's levels of participation included increasing PE to two hours per week to help improve participation (accumulated through MVPA recommended guidelines). However, while MVPA is highlighted as an outcome in Scotland's CfE, the guidelines on how it should be implementation are unclear and mostly subject to teacher interpretation (McEvilly, Verheul, Atencio, & Jess, 2014). Indeed, there is no information contained in Scotland's CfE to suggest that school PE should facilitate activity towards achieving the recommended activity guidelines). This lack of clarity in the curriculum was highlighted by Priestly (2010, p. 23), who showed that Scotland's CfE has been criticised for being vague because of its non-theory based, 'mix-and-match' design.

The Purpose of the Study

The purpose of this study is to carry out a qualitative investigation focusing on the perceptions of Scottish PE teachers, knowledgeable on policy issues, active in the

development of future teachers, and with experience in working alongside young people within a Scottish context. By studying PE teachers in this way, it is hoped to further understand the 'nature of PA in young people within a Scottish context' and the related multi-faceted complexities underlying participation. Also, this study looks to explore further the motivational influences on young people's PA and the extent to which factors such as SES and significant others (e.g., parents, teachers, and coaches) may impact on participation.

Methods

Participants

The participants (n = 6) in this study were all qualified PE teachers (males = 3; females = 3; aged 27 - 60 years) employed (at the time of their interviews) as University teaching fellows (n = 4) and lecturers/researchers (n = 2). All the participants had a broad range of experiences working in Scottish primary and secondary schools, and in coaching/working with young people in various sports activities out-of-the school environment. Also, one participant had experience working on community-based programmes, specifically, with young people from lower SES backgrounds, and two participants were involved in higher level policy to do with Scottish curriculum.

While all the participants in the present study are qualified PE teachers, it was not a selection requirement for them to be currently practicing. The principal reason for this decision are linked to the potential biases in practising PE teachers (towards their school programme) and their inclination to have a narrow viewpoint on curriculum PE (specific to their school programme only), therefore, are less likely to have a wider outlook on curriculum policy matters impacting on schools PE (this was further discussed in the previous chapter, p. 157).

The participants were not required to provide any personal information, although, for confirmation of occupational experience, age and years spent in various PE context (e.g., years of experience as a qualified PE teacher, years teaching in primary and secondary school, years in teacher education, and years involved in PE policy) are reported. This information is contained in Table 6.1 below (an alias is assigned to each participant and will be used throughout the results and discussion).

Table 6.1 Details of participants

Alias	Sex	Age	Years as a qualified PE Teacher	Years teaching in primary school	Years teaching in secondary school	Years in teacher education	Years involved in PE policy
Brian	Male	38	12	2	12	>6	None
Ben	Male	44	20	9	12	9	none
David	Male	60	40	5	7	>20	12 years
Skye	Female	35	20	none	5	15	5
Sam	Female	27	4	none	1	3	none
Lesley	Female	38	17	2	16	1	none

Recruitment of Participants and Consent

Selection of participants was purposeful and were recruited through individual solicitation (via emails) and snowballing techniques whereby at the completion of interviews participants were asked to recommend potential participants experienced in PE along with expertise and knowledge of policy and its delivery within a teaching domain, therefore, fulfilling the needs of the study. For example, Brian recommended Lesley because she was very closely linked to working in a school environment having only just recently joined the University (Noy, 2008).

Volunteer participants were sent (via email, a minimum of two weeks prior to their interview) detailed information about the study in which they were asked to participate (Appendix 6.2). This interval period prior to the commencement of the study was allocated to enable the participants the opportunity to absorb the information ensuring they understood fully what participation would entail, and provided them the opportunity to ask questions prior to being interviewed. Immediately prior to the interviews, participants were provided with the required consent forms (Appendix 6.3) to complete. Approval to conduct the present study was gained through the Edinburgh Napier University Ethics Committee. Immediately prior to the interview participants were reminded of their rights to:

- Refuse to participate without adverse consequences
- Not answer specific questions without having to give a reason
- Withdraw from the research at any point without any adverse consequences

Participant Interviews

A total of six semi-structured interviews were carried out with PE teachers detailed at Table 6.1. The purpose of the interviews was to investigate the views, opinions and experiences of the participant's expertise in working with Scottish young people in PA. In line with Hill, Le Grange and Newmark (2003), the questions used in the interviews were designed based on the findings from the literature and studies one and two. Also, the design of the questions considered the assumption that qualitative research through semi-structured interviews will generate a deeper understanding of the data collected (Thomas, Nelson, & Silverman (2011). Charmaz (2006) considers semi-structured interviews as an efficient technique in which to gather rich and in-depth data. By using this style of interviewing, the researcher can probe deeper into areas of interest and explore in more depth the participant's subjective interpretation (e.g., curriculum policy related issues), therefore, the 'nature of PA in young people' (see chapter four, for further discussion, p. 86).

The proposed questions were then discussed with the research team before the commencement of the interviews (the interview schedule is at Appendix 6.4). The research team agreed that the questions (primary and secondary questions) within the interview schedule were appropriate and would provoke the relevant responses in the area under investigation. For example, question two asked primary and secondary questions associated with school PE: primary question; *'can you explain the purpose or and aims of PE during primary school and secondary school'?* The secondary questions asked participants to explain and describe for example, *'why these types of activities during PE are important?*

All the interviews were conducted (and recorded) from the participant's offices within the University buildings which were free form distraction. The semi-structured interviews provided all the participants with the same opportunity to answer the same questions and to pursue personally relevant areas not included in the interview schedule (Podlog & Eklund, 2006). At the end of each interview, the researcher provided a summary of each participant's responses to verify understanding and accuracy (Bench, 2007).

Data Analysis

The purpose of the data analysis was to interpret and attempt to understand participant's views, opinions and experiences of young people's PA focusing on nature of their

activity, key transition points during young people's development and policy related to the provision of PA within schools PE.

In study two, NVivo 10 for Windows qualitative data analysis software package (QSR, International Pty Ltd, 2014) contributed towards coding, theory building and the emergence of concepts, categorisation, and themes. The lessons learnt from study two in using NVivo 10 were that while it can efficiently organise, store, and manage data it could not code the data itself in a creative or intuitive way, and this part of the analysis remains the responsibility of the researcher (Saldana, 2013). Researchers have the necessary skills (e.g., deduction, induction, synthesis, abduction, critical, and logical thinking and evaluation) to conduct the more intuitive analysis which is where the computer software is limited (Saldana, 2013).

In the present study, this ability to apply these skills was important especially since there considerably richer (more narrative) data collected from each of the participants. This amount of data was expected because the participants in this study were adult professionals and were more able to effectively articulate their thoughts. For example, the responses by the participants in study three were lengthy and provided lots of data (more paragraphs of information) compared to the much shorter responses by the participants in study two, which, sometimes were no more than yes or no. Therefore, the researcher to make more sense of the data in this present study used the more flexible analytical approach found in thematic analysis (Braun & Clarke, 2006). Also, there were less participants in this study (n = 6) than used in study two (n = 18). This reduced number of participants meant the organisation of the data was manageable using the Microsoft office word (2013) for Windows software.

While thematic analysis is widely used as an analytical tool, there are no clear guidelines for its application (Tuckett, 2005) therefore allowing for the 'anything goes' approach to qualitative research (Antaki, Billig, Edwards, & Potter, 2002). In the present study, this analytical flexibility was used to identify, analyse and report patterns (e.g., through a combination of inductive and deductive analysis) from within the data gathered (Braun & Clarke, 2006).

In line with Table 6.2, the phases of the thematic analysis in the present study use a similar format. The interviews are transcribed using Google transcribe (downloaded via Google at: https://transcribe.wreally.com/) during which meaningful patterns (through inductive and deductive analysis) were identified through early analysis of the data.

Table 6.2 Phases of thematic analysis (cited in Braun & Clarke, 2006)

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Initial codes were generated and organised into categories which was achieved following a systematic process of constant moving back and forward through the data. Resulting from this process potential themes and sub-themes began to emerge which then through ongoing analysis were refined until clear definitions and names were finalised (Braun & Clarke, 2006).

The draft results (an example is presented at Appendix 6.5) shows the initial organisation of quotes along with early concepts and categorisations which resulted from a process of constant comparison of data as described above. This organisation of data continued and was refined until the researcher team were satisfied that the results were coherent which then subsequently led to the results and findings presented below.

Results and Discussion

Through systematic analysis of the data, three themes emerged and are discussed throughout this chapter. The emergent Themes are as follows:

- Previous experiences form attitudes influencing behaviours towards PA participation
- The nature of sports and MVPA in secondary school PE
- Physical activity facilitated through school PE is limited by the CfE

Theme-1: Experiences Form Attitudes Influencing Behaviours Towards PA Participation

Analysis of the data brought about the emergence of this first theme which resulted from the generation of codes and categories as shown in Table 6.3 and described throughout this section.

Table 6.3 Theme 1: Categorisations and themes generated from initial codes

Categorisations	Theme 1
Parental, Social & Cultural Factors Influencing Participation During Early Childhood	Previous Experiences Form Attitudes Influencing Behaviours Towards Physical Activity Participation
Attitudes in Adolescence are Linked to Previous Experiences	
Many Factors Influence Non-Participation During Adolescence	
Teachers and Pupils Attitudes Change for the better when Youngsters Reach 16+ Years	

Parents, Social, and Cultural Factors Influencing Participation During Childhood

Three participants reported that young people in early childhood, mostly participated in unstructured play activities and that family members particularly parents influenced the types of activities. This is illustrated in the following extracts:

> Skye: At a young age it's mostly play [unstructured] in and outside of the home. It is very much dependent on family, mostly the parents, as to which physical activity children are involved in.
>
> Brian: Parents are very influential in what their children do [type and levels of physical activity] at a young age.
>
> Lesley: At a very young age family have a huge part to play in their children's physical activity and the sort of sports and other activities are involved in.

Lesley added that children's PA in later childhood is very much dependent on their parents. She suggested that parents continue to influence their children's PA (mostly structured) throughout childhood:

> Children's extra curricula physical activity [structured activities] in later childhood is very much dependent on the parents, and what they want them to do.

All participants reported that PA is more about play during early childhood and then becomes more structured and competitive (e.g., sports) as children get older. This is illustrated by Sam:

> When pupils are younger most of the activity is more about playing with friends, going to the park and just playing. Whereas as they grow older physical activity tends to become more organised and more competitive changing from play during early childhood to more structured and competitive as they get older.

Similar comments were made by Skye although she also reported that children not interested in sport became less physically active as they got older:

> There are more opportunities for children to engage in play type activities, but as they get older, some children engage in less activity which tends to be those not interested in sport.

Also, Lesley reported that children's PA (sports) are gender based which is influenced by parents pushing their children into doing certain activities:

> I think that the majority of pupils are pushed into certain activities so the majority of 5-year-old girls are pushed into dance and 5-year-old boys are still pushed into football or rugby. I think this is largely down to parents who carry that philosophy.

Four participants reported that children and parents identify with PA as gender based and that certain activities are either masculine or feminine. This is illustrated by Lesley as follows:

> I do think children's activities are gender based, in terms that certain activities

> are seen [by parents and children] as being masculine whilst other activities are seen as feminine.

Further, Skye commented on perceptions of identity as being closely linked to gender and certain sports during secondary school PE:

> Boys and girls are perhaps drawn more towards the ones [sports during secondary school PE] closely linked with perceptions of their identities. So, those girls quite feminine in nature may want to do an activity they perceive as being more feminine. For example, dancing or gymnastics and the boys football or rugby.

David and Sam reflected on their previous experiences which supports the idea that strong gender biases influence young people's participation in certain sports:

> David: I was part of a group of students who were asking 5 and 6-year-old pupils and they asked the boys about dance... the boys said that they don't do dancing, dancing is for girls.
>
> Sam: When I was teaching at school the main sports considered cool were football for the boys and hockey for the girls.

These findings suggest parental, social, and cultural factors in early childhood influence the way in which young people identify with PA particularly in sports and in school PE. For example, young people may identify certain sports as being either masculine or feminine and depending on how a sport is identified (as either feminine or masculine), may well be the deciding factor in determining whether they participate in that sport.

This finding is consistent with Fredrick and Eccles (2005) who suggested that the beliefs of parents strongly influenced their children's beliefs and subsequently their PA outcomes. Similarly, study two in the present thesis showed that sports can be stereotypical and that boys identify with football and girls with dancing for example. Also, study two demonstrated that parents influenced their children's beliefs, attitudes and behaviours towards sports. Eccles, Wigfield, and Schiefele (1998) identified parents as providers of their children's experiences, interpreters of their children's experiences, and as role models to their children. For example, in a PA domain, parents

create the opportunities by signing their children into activity clubs, transporting their children to clubs, events and competitions, and providing the logistical support for their participation (Green & Chalip, 1998). The importance of parental influence on children's levels of participation in PA is highlighted by Edwardson and Gorely (2010) as key if children are to lead a PA lifestyle.

While the views of the participants in the present study are consistent with the research, a deeper understanding of why parents influence young people's PA is not articulated. For example, the research suggests that culture impacts on parental socialisation because expectations, customs, and traditions are passed down from generation to generation (Bhalla & Weiss (2010). This example perhaps illustrates that by having insight into the underpinning reasons for young people's behaviours (i.e., through their culture and beliefs, will better inform significant others (e.g., teachers and coaches) and lead them to design their curriculum differently. This awareness is especially important in the current climate in modern society (e.g., the UK and Scotland) that strives to promote inclusion for all policy (Scottish Government, 2015). For schools, this means considering the needs of multiple cultures, race, religious beliefs, and disability requirements (Dyson, Gallanaugh, & Millward, 2003).

Further, Skye reported pupils also identified with certain sports based on primary schools attended (i.e., SES location) which then influenced pupils to participate in only certain sports during secondary school:

> I taught at a school which had pupils from a broad catchment area and pupils came from very different social backgrounds and there was almost a bit of snobbery to do with which primary school pupils came from. So, pupils from one primary school (higher SES) were seen as the very wealthy and the pupils coming from another (low SES primary) were seen as less well-off. This had an effect on which sports some kids participated in. For example, only those girls coming from wealthy backgrounds played hockey.

This suggests certain perception about SES can lead some pupils to believe that they can only participate in certain sports based on primary school attended SES (e.g., hockey is for posh kids only) which was consistent with the findings by Wheeler (2011).

Attitudes in Secondary School PE are Linked to Previous Experiences

Four participants reported that young people's attitudes towards activity are already set by the time they enter secondary school and that these attitudes are directly linked to childhood experiences, subsequently leading to differences in pupils' levels of participation, sometimes non-participation during secondary school PE and associated after school clubs. This was illustrated by the following participants:

> Lesley: In terms of secondary school [curriculum PE], pupils' attitudes are already set when they come into first year [S1]. There are some pupils not doing very much physical activity when they come into secondary school and there are those pupils doing lots of [physical activity] either through sport or just to keep themselves fit.
>
> David: There are so many different ways around the way in which boys and girls develop and there is quite a divergence as they move into adolescence. But much of this is happening beforehand so the idea that they [pupils] suddenly wake up and suddenly stop doing physical activity is a simplistic and almost a polarizing view.
>
> Brian: Pupils' experiences from primary school [PE] have a lot to do with whether they participate in physical activity or not in later years [in secondary school PE].

Lesley also commented on previous experience, highlighting it's the negative experiences that are directly linked to non-engagement in secondary school PE:

> Pupils having negative experiences from previous PE or sports participation [during primary school] may be apprehensive and so not engage in PE in secondary school.

Further, two participants reported negative experiences from childhood influence pupil's perceptions of their own abilities (and comparing with others) and sense of enjoyment towards participation in secondary school PE. Skye and Sam comment:

> Skye: I think one of the key reasons pupils avoid PE is that they [pupils] don't think they are good at it, they've had negative experiences [during childhood], they compare their own abilities against other pupils and realise they're not very good, so why do something you're not good at its not fun.
>
> Sam: Some young people perhaps don't enjoy sport [during secondary school PE] because maybe they've not had the experiences in a sport when they were younger.

These comments to do with enjoyment and abilities are consistent with self-determination theory (SDT) which has suggested that if any of the basic psychological needs are thwarted (i.e., competence, relatedness, and autonomy), then levels of intrinsic motivation (enjoyment) will be reduced (Deci, 1985). This tenet to do with SDT was also supported by Owen, Astell-Burt, and Lonsdale (2013) in a school PE context, which in the present study, is further exemplified through previous comments whereby competence, through pupils' lack of ability; relatedness, through pupils being ridiculed by peers; and autonomy, through pupils having to participate in compulsory PE all contributed to declines and complete drop out from secondary school PE.

This goes some way to suggest childhood experiences play a vital role in the formation of attitudes, as well as determining levels of participation through motivational conditions in adolescence such as during secondary school PE and extra curricula activities. This is partly supported by research carried out by Coakley and White (1992), who found that participation in PA was influenced by previous experience. Their findings suggest that positive past experiences during childhood PE guided future expectations of sport and exercise, whereas negative past experiences brought about non-participation through lack of choice, feeling incompetent, and receiving negative feedback from peers. Therefore, people in positions of influence (e.g., teachers and coaches) need to be aware that those young people demonstrating a dislike towards certain activities may well be doing so as a direct result of their childhood experiences. These findings perhaps add further confirmation that parents play a pivotal role, as do teachers and other significant others, in shaping their children's attitudes and behaviours towards PA particularly in sport, throughout childhood and into later years.

Many Factors Influence Non-Participation in Adolescence

Most participants reported other factors that can lead to non-participation in adolescence (i.e., secondary school PE), as lack of opportunities, financial limitations and access to transport. Sam commented on lack of opportunities:

> Some children didn't have the opportunities to do certain sport when they were very young out with school, whereby if they've not had access to certain sports this can influence how they feel about access to certain sports when they are older.

Skye commented on financial limitations:

> Some parents are unable to afford many of the sports [outside of school] which can be costly - and that does impact on what they [youngsters] can do in terms of range of activities.

Ben commented on access to transportation:

> Some pupils have to get the school bus after school so can't go to after school clubs [because the bus only operates during normal school hours], their parents don't have cars so can't collect them. Parents taking their kids to and from the sports activities can be very costly so that can have an impact on their children's participation in sports too.

Some of these factors mentioned are consistent with findings in Scotland. For example, Inchley, Kirby, and Currie (2008) looked at children's PA through mostly sport and the association between paternal support and family affluence. They demonstrated that affluent children had higher support from their families which then provided them with more opportunities to participate in PA. Also, Currie et al. (2010) looked at transportation to and from school and reported that 26% of pupils usually travel to school by bus or train, which, when combined with the findings from the present study, suggested that 26% of children in Scotland were unable to attend afterschool sports activities.

Lesley commented on the negative impact technology is having on levels of PA such as video games and computers, and showed that increased participation is directly linked to more sedentary behaviours. Lesley Comments:

> Unfortunately, levels of play [in the park, with friends] and participation in other activities [sports] have dwindled with technology [video games, computers etc.] over the years and as a result I don't think kids at any age get enough physical activity.

Furthermore, Lesley went on to report that some parents just don't have the desire to encourage their children to participate in PA preferring to opt for a more sedentary lifestyle instead such as watching TV:

> Some parents don't have the desire to push their children to do sports and have a laid-back attitude and probably just sit in front of the TV instead of making the effort to go and do things [physical activity] with their children.

This option by some parents to choose a more sedentary lifestyle over a PA lifestyle likely influences similar behaviour outcomes in their children. This finding is supported by Van Der Horst, Paw, Twisk, and Mechelen (2007) in their review on correlates of PA and sedentary behaviours in youths. They reported that several factors increased sedentary behaviour including the amount of time spent viewing television or video and parents viewing of television, which they also identified was linked to SES (based on parental incomes) as a contributing factor where parent's viewing habits influenced their children's viewing. However, other research suggests that there is not such a strong association between technology and PA. For example, Rey-Lòpez, Vicente-Rodrìguez, Biosca, & Moreno (2008) conducted a review of published studies and reported that sedentary behaviours such as computer games and watching TV does not displace time spent doing PA. Biddle, Gorely, and Marshall (2009) in their study looking at TV viewing and sedentary behaviour in UK teenagers showed that TV viewing is not a good indicator of time spent being sedentary.

While the above studies debate the 'technology Vs PA' question, the influences discussed (e.g., parents and technology) will likely, at some level, impact on young people's attitudes and behaviours (towards PA) during their development years. Therefore, to help ensure improved health and well-being outcomes, it is important to find the right balance between times spent using technology and the time being PA (Smith & Biddle, 2008).

Although some participants in the present study suggest that technology is responsible for young people not achieving sufficient levels of PA, their comments are generalised, therefore, lacks the accuracy in accounting for the nature of young people's PA. Also, other evidence suggests that use of technology is a concern, however, are limited by the accuracy of measurement of young people's PA (Dollman et al., 2009). For example, the types of PA such as active travel and active play, and the levels (intensity) and amount of time young people are active (Rey-Lòpez et al., 2008).

Teachers and Pupils Attitudes Change for the Better when Youngsters Reach 16 Years

All participants reported that once pupils enter into S5 they are no longer forced into doing PE and that during this time, PE sessions are more relaxed, and pupils are given greater responsibility and more choice: This is illustrated by Brian and Lesley:

> Brian: So at the 16-year-old point (S5), that's the last time pupils are led or forced to do PE. At this point it then becomes up to the pupil to pursue ways, or not, to become physically active. Some pupils just stop altogether saying they don't like it, they don't see the need for PE as it no longer a formal part of the curriculum...some schools offer leisure PE where its only for S5 and S6 and these provide pupils aged 15 and 16 more choices, more options including going to out of school activities such as golf clubs and bowling clubs; so it becomes a bit more relaxed and pupils are entrusted to go along to the gym (or other activities) for an hour and then come back to school.
>
> Lesley: During S5 and S6 pupils have more choice and teachers give pupils much more responsibility and things like that I took girls to the gym and they asked if they could stay for longer.

This finding aligns with study two (p. 122) that shows participation in secondary school PE in S5 was through choice, rather than compulsory which was the case in early secondary school (S1 – S4) when pupils were required to participate in specified core PE activities. Also, secondary school PE during S5 provided pupils with opportunities to take on some responsibility. However, study two only considered those students currently enrolled onto the S5 PE programme, therefore, unable to report on those enrolled in other academic subjects within the same school choosing not to continue with school PE.

In the present study, Sam reported that other academic subjects were perceived to be more important than non-certified PE during S5 and S6, which due to the pressure and level of priority given to these subjects, perhaps caused some pupils to disengage from participating in PE altogether. Sam comments:

> In S5 and S6, if a pupil isn't taking PE as a certificated subject then they have many academic pressures on them which, leads them to disengage from PE and therefore consider PE as not a priority and wonder why they are doing PE when they could be studying for exams. So, that's a main barrier in S4, S5 and S6 and pupils view PE and after school activities as a waste of their time when they have important exams to study for.

Brian reported that those young people no longer attending school, and who were not keen on sports when they were at school, were currently (at the time of the interview) taking part in non-sport PA. This finding demonstrates that although some pupils don't want to participate in sports in school PE, it does not necessarily deter them from taking part in non-sports PA. Brian comments:

> Some pupils once they have left school will carry on being physically active...they've told me that - when I've met them since they've left school - that they weren't keen on some of the sports they did at school. But now they're going to the gym. This could be because they feel more confident to participate, or that they have more time, or it's just that time in their lives.

This finding is consistent with the work carried out by Lewis (2014) who used qualitative inquiry to investigate secondary school pupils' (aged 13 and 14) and teachers' experiences in school-based PE. The study demonstrates that the reasons for pupils' declines in secondary school PE are because of the controlling behaviours of teachers. Lewis (2014) went on to describe that by forcing pupils to take part in school PE in this way, fundamentally undermined their sense of autonomy. SDT supports this by stating that if any of the basic psychological needs are thwarted such as a person's autonomy to participate in PA, then that person's intrinsic motivation is likely reduced, thus causing disengagement from participating in PA altogether (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997).

Key points:

- In childhood (primary school age), parents appeared to influence the way in which their children identify with PA (mainly sports) leading some pupils to believe they can should only participate in sports based on their gender.
- Childhood experiences seem to influence the formation of young people's attitudes towards secondary school PE.
- Barriers that prevent some young people from taking part in some PA (mostly structured based sports) emerged as lack of opportunities, financial restrictions and lack of access to transport.
- In early adulthood (S5 and S6) PE not compulsory therefore pupils were treated differently by their teachers and as such were given more responsibility and more choice. Young people during this time (S5 & S6) seemed to participate in PE because they wanted to for reasons such as enjoyment.

Theme-2: The Nature of Sport and MVPA in Secondary School PE

Further analysis of the data brought about the emergence of this second theme which resulted from the generation of codes and categories as shown in Table 6.4 and described throughout this next section.

Table 6.4 Theme 2: Categorisations and themes generated from initial coding

Categorisations	Theme 2
Sport in PE Facilitates or Debilitates Participation	The Nature of Sport and MVPA in Secondary School PE
Facilities and Teachers Influence PE to be Sport Orientated	
PE Struggles as a Provider of MVPA	
MVPA is Mostly Linked to Sport Only	

Sport in PE Facilitates or Debilitates Participation

Several participants reported secondary school PE (curricula-based activities) is orientated towards team and individual sport based activities and provides more opportunities (compared to primary school) for young people to get involved in these activities during PE sessions and after school sports clubs. This is illustrated as follows:

> Sam: PE activities are mostly sports based such as team games e.g., basketball, rugby, hockey and some schools do individual sports such as badminton.
>
> Lesley: secondary school PE is still orientated towards sports based activities.
>
> Ben: More opportunities at secondary school [for pupils] to get involved and participate in various sports in PE and extra curricula.

Brian said that pupils with previous experience and are good performers in sports activities and are better prepared to participate in secondary school PE. Brian comments:

> In terms of PE if pupils already have a background in sports, a good base, good

> performers (in sport) they (pupils) will slot straight into secondary school activities (extra curricula sports activities).

However, most participants reported that those pupils less experienced in sport-based activities found it harder to participate in school PE and after school activities. The participants went on to suggest that the reasons for these difficulties were because the pupils did not have the necessary experience, therefore, were less 'able' to perform the activities on offer (curriculum-based activities). This lack of experience consequently led some pupils to avoid taking part in PE based activities for fear of showing themselves up in front of others they perceived as much better than them (mainly their peers). The following participants illustrate this:

> Brian: ...those pupils a little less experienced and less able to do so [sport based activities], will find it a little bit harder to take part in PE and extra curricula sports clubs… so they won't take part in PE because they don't want to show themselves up in front of others.
>
> Sam: So, when they [secondary school pupils] go along to say PE and are expected to do sport they feel a lack of competence where they perceive others to be much better than them at sport and so don't want to take part.
>
> Lesley: Some pupils didn't like doing PE because they stood out because they were not very good, because they weren't very capable with their bodies.

Sam commented that some pupils don't perceive experience in sports as a contributing factor in the development of their competence, rather they see only others as more talented and themselves as not good enough. Sam Commented:

> Instead of seeing others as just having more experience [in developing competence], they see it as others being more talented than them which makes them think they are not good enough.

Sam and Brian explained that PE sessions are an arena where pupils are on display where their abilities are either admired or ridiculed, and where some pupils avoid engaging in learning opportunities for fear of being judged by others:

> Sam: PE can be an arena where pupil's are on display and are exposed. Pupils will admire other pupils for being good at sport and mock or ridicule the pupil

> that can't perform, or the pupil who is always falling over, or the pupil who is always dropping the ball. For example, in soft ball a pupil might think that if the ball is passed to them it's a kind of embarrassment, so rather than thinking of this as an opportunity to improve their skills and get to the same level as other better performers, they see it as a threat where they don't want to put themselves at risk socially, where everyone is going to laugh at them and where they might look like an idiot that can't do the skills.
>
> Brian: If pupils are not very good at PE, uncoordinated and are struggling that's a big public performance of their lack of abilities... everyone (peers and teachers) can see... that makes pupils feel very uncomfortable so that's very tough on them.

Furthermore, Sam went on to comment that these behaviours - ridiculing those pupils not good at PE - can continue out of the PE environment both in, and outside of school: Sam Comments:

> It might not be during PE that pupils feel ridiculed or whatever, it may continue after PE, during lunch break or outside of the school environment.

These findings to do with bullying in the present study are consistent with the research in Scotland (Currie et al., 2011). Similar findings to do with pupils feeling self-conscious, being ridiculed for lack of ability in school PE emerged in study two (and were closely associated with bullying, p. 152). For example, participants reported being called names, being taunted from the side-lines and feeling excluded by others (pupils) from participating in PE. Study two appeared to suggest that those pupils reporting being bullied, had experienced an uneasy transition into the secondary school, which was linked to negative experiences in childhood. This transition from primary to secondary school was also found to be a period (during the pre-and post-transition) when several pupils reported having increased anxieties (Hanewald, 2013; Waters, Lester, & Cross, 2012) particularly to do with their identities (Pratt & George, 2005).

In the present study, all participants commented that early secondary school (i.e., S1 and S2) is when pupils establish their identities, and was when pupils were most concerned about what others thought of them (their peer group), and which then influenced who they socialised with, and whether they attributed a value to PE or not. This is illustrated as follows:

> Brian: This time during S1 and S2 is when pupils are establishing their

> identities, working out who's who and who are the popular pupils and which includes who is doing PE or after school clubs.
>
> Lesley: secondary school has an influence on pupil's physical activity [PE, school sports clubs] in terms of who they choose to socialize with. So, if they socialise with other pupils that are not bothered about physical activity and sport, it tends to rub off on them and they then think they look cooler by not participating.
>
> Sam: Young people are worried about what other people are thinking e.g. they might not want to go to an activity due to being concerned about what others are thinking of them. Some youngsters felt they couldn't go to certain clubs because that's where only certain people can go and that they wouldn't fit in or be accepted by others. For example, I was speaking to some girls (secondary school pupils) and they were talking about the school hockey club saying that they couldn't go to the hockey after school because it's only for the posh girls [already good at hockey].

This finding is consistent with the literature which describes these behaviours as being an integral period in adolescent development when young people experience heightened levels of awareness, an interest in establishing social bonds, and peer relationships. Because of the PA and social changes during this transition period, young people are more self-conscious about their appearance which can then cause many to become anxious that others (mostly their peers) are negatively evaluating them (Raedeke, Focht, & Scales 2007).

This experience is described as when someone is feeling social physique anxiety (Hart, Leary, & Rejeska, 1997), which for many young people occurs mostly in adolescence, and is especially high in secondary school particularly in PE (Crombie, Brunet, & Sabiston, 2011). Studies have used social physique anxiety in conjunction with SDT to help explain issues to do with basic psychological needs (e.g., relatedness and competence). For example, how the development of social physique anxiety and SDT can be used to improve levels of participation in PE through better relationships between teachers and pupils (Gairns, Whipp, & Jackson, 2015).

However, any attempts used to enhance pupil's self-determined behaviours to participate in PE should exclude the promotion of extrinsically motivated strategies in teaching, such as having pupils change their physical appearance through exercise. This type of behavioural change strategy would likely result in pupils to disengage from participation altogether (Niven, Fawkner, Knowles, Henretty, & Stephenson, 2009; Thøgersen-Ntoumani, & Ntoumanis, 2006). Research exploring the development and

effectiveness of young people's learning environments have included autonomy supporting strategies (Soenens & Vansteenkiste, 2005) and motivational climates (Morgan & Kingston, 2010). More recent research advocates the importance of using autonomy supportive teaching practices in PE (Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015). Haerens et al. (2015) suggest that this could be achieved through teacher education including that teachers are made aware of the associated motivational risks from using extrinsically based motivational teaching practices.

Indeed, in the present study two participants reported that some social groups attributed a substantial value (could be described as bragging rights) to participating in secondary school PE. They went on to explain that some pupils may place others (those participating in PE) as being in a hierarchal order within the school. This level of adoration may influence pupils to use extrinsically motivated strategies (such as that mentioned above) to improve their social status among their peer group, without realising that adherence to participate in future PA would likely be compromised. Lesley and Sam illustrate this:

> Lesley: Some social groups can be very different whereby they [pupils in a particular group] view pupils participating in PE as doing very well and almost look up to them.
>
> Sam: I've had pupils say to me (mostly boys) that school PE is everything, they've said that if you're not good at PE then you're not worth knowing. And this can become part of a pupil's identity which mostly occurs during early secondary years.

Teachers and Facilities Influence PE to be Sport Orientated.

Two participants implied that school PE sessions are sports orientated because of the traditional teaching styles used, schools' facilities (and equipment) and teachers' expertise. Lesley and Sam illustrate this below:

> Lesley: The problem is [with PE] that there are still a lot of old school [traditional teaching] teachers who teach PE through sport.
>
> Sam: Schools have these activities as part of PE because that's what has always been done [traditional], that's what facilities and equipment schools have and that's what teachers themselves have expertise and taught to do.
> Sam explained that teachers without the required expertise would be

uncomfortable in the delivery of new PE activities:

> By introducing new activities [less traditional and non-sport] to the PE curriculum, the teachers themselves may not have the expertise, so won't feel comfortable in delivering new activities.

Some of the participants said that PE teachers are under pressure to deliver national qualifications as formal. Therefore, performance orientated activities (e.g., sports activities). This is commented on by Lesley and Brian:

> Lesley: secondary school teachers are driven by the national qualification (certification) and a large part of that is performance driven [sports orientated].
>
> Brian: There is a lot of emphasis and stress put on teachers, that unless they [teachers] are doing formal sports type activity, and unless the activities are organised and led by someone, by the teachers, then they [teachers] don't get that recognition [of doing a good job].

This finding aligns with the Scotland's Curriculum for Excellence (Education Scotland, 2016; Scottish Government, 2015) that outlines the secondary school PE guidelines, which are mandatory in the early secondary school (S1 to S3, extended to S4 in some schools). These guidelines for activities are measured by learning outcomes which are certificated, therefore nationally assessed, and achieved through mostly formal sport-based activities. Certificated PE starts from S4 in preparation for national qualifications. Scotland's CfE stipulates that PE, as part of the school syllabus, is responsible for helping pupils develop other transferable skills such as team building and social interactions.

Some of the participants' comments are consistent with the recent research. For example, Carse (2015) showed that PE teachers felt constrained by traditional sports perceptions of PE held by children and colleagues. Also, several participants described the important contribution sport has towards levels and intensity of PA along with other contributing factors including enjoyment, being part of a team, learning new skills, and socialising. Some participants emphasised the importance of engaging those pupils not experienced in sports: This is illustrated below:

> Lesley: Organised sport is important because there are lots of young people who enjoy structured sports, they enjoy being competitive, they enjoy being part of team, they enjoy learning new skills and it's something that helps

them to do physical activity regularly and it's a social thing as well.

Brian: The benefit of sport as a contribution to physical activity is that they (the pupils) are not thinking about it so if they are running after a ball on a football pitch then they are not thinking about whether they're getting their HR up.

Ben: PE needs to make sure that those pupils not having experienced sport elsewhere (out of school during childhood), or who don't feel competent and don't feel good at doing sport; find a way of getting those pupils on board.

Sam implied that if pupils are not taking part in PE based activities then they would not achieve increased HR.

Sam: Whereas, if sport is taken out of the equation, and pupils don't take part in sports or other PE games, how else do pupils get their HR up?

These comments appear to suggest that some teachers believe that sports based activities during school PE is the most (only) effective way in which to achieve PA benefits such as increased heart rate (HR). However, this is not consistent with the findings from study two which highlighted that PE based sports do not necessarily ensure all participants are achieving increased HR. Other research shows that increased HR or energy expenditure (in PE) differs from person to person and is very much determined by the type of sports and the position played, which, influences the extent of personal engagement and effort (Ainsworth et al., 2011; Salvo et al., 2007). Indeed, research carried out by Warburton and Woods (1996) exploring intensity of HR during school PE, concluded that although some activities during PE do increase HR, there are many activities, such as swimming, where heart rate is rarely raised to a level to benefit health. More recently, Wood and Hall (2015) found that primary school PE only provides children with 10% of their lesson engaged in MVPA (i.e., increased HR).

Sam's comments may also suggest that some teachers believe that young people are not participating in sufficient amounts of PA (to benefit their health through increased HR) during non-PE activities or out-of-the school environment (i.e., '…how else do pupils get their HR up'). This is not supported in the literature which suggests young people are participating in other PA which increase their HR through unstructured PA such as active travel (AT) and active play (AP). For example, Inchley

et al. (2008) have shown that young people are physically active for varied durations and at mixed intensities on every day of the school week through AT (e.g., walking to and from school) and AP (e.g., during school breaks). Also, study two showed that young people are physically active through unstructured activities out-of-school (i.e., AT-2 and AP-2) which likely contributes to recommended PA guidelines.

Physical Education Struggles as a Provider of MVPA

Most participants reported concern that current PA guidelines (2 x 60-minute quality PE per week) imposed on teachers by the Curriculum for Excellence (Scottish Government, 2015) is a difficult expectation to achieve and which will not solve the problem of engaging young people in sufficient formal PE, nor the expectation for them to achieve the recommended MVPA guidelines (at least 60-minutes MVPA up to several hours every day, The Scottish Government, 2016). Sam and Lesley illustrate this concern:

> Sam: It's very difficult to for PE, as a subject, to deal with the pressure of MVPA guidelines and expectations.
>
> Lesley: The Government policy of two hours PE per week is not going to solve the problems of young people not participating in enough physical activity.

Brian said teachers are being measured on their abilities in achieving these PA guidelines:

> There is this physical activity drive in the world of PE (and in Scotland) and Teachers in PE are being measured on having children achieve physical activity guidelines.

Furthermore, David reported teachers were under pressure to achieve these guidelines which don't benefit all pupils:

> If you put a number on it [MVPA guidelines] it is almost a moral guilt trip… a number on this sort of thing suggest to people [teachers, parents and youngsters] that this is what they must do at all costs which, doesn't work for all youngsters anyway.

Also, several participants reported school PE is limited by only having two 60-

minute periods per week, therefore, the recommended MVPA cannot be achieved through school PE alone. This is illustrated as follows:

> Ben: There is just not enough time in the PE session to achieve sufficient MVPA.
>
> Lesley: Schools don't have the timetable to achieve MVPA we only have two hours per week.
>
> Brian: The contribution of formal physical activity in school is limited because PE teachers only have pupils for 50-minutes once or twice a week.

Further, Lesley said that formal PE sessions are reduced by other factors including the time it takes to walk to the venue: Lesley comments:

> By the time pupils get changed walk to the Astro-turf which can be 5 - 10-minute walk which means one period of PE can sometimes only amount to 30 minutes of actual activity.

This is consistent with the findings from study two that shows that although pupils participate in one or two 60-minute sessions of curriculum PE per week, the recommended levels of MVPA cannot be achieved during PE lessons. Also, previous research suggests that only low amounts of MVPA can be achieved through just one PE lesson (Malmeleira, 2012; Warburton & Woods, 1996; Waring et al., 2007), which, support the present study findings.

These findings contradict the Healthy Living Survey 2015 (HLS, Scottish Government, 2015) which suggests that the target provisions for PE (120-minutes per week for primary and 100-minutes per week for secondary) are being achieved in primary (99%) and secondary (93%) schools. While it might be argued that the HLS, 2015 (Scottish Government, 2015) findings include all aspects of PE such as health and well-being and academic aspects and not just MVPA, other factors reported by the participants to do with, for example, pupils changing time and walking to the Astroturf would also impact negatively on the duration of the PE lesson. Furthermore, the HLS, 2015 (Scottish Government, 2015) suggests secondary schools achieve 93% of the target provisions through years S1 to S4, however, according to the literature and study two, participation in secondary school PE steadily declines from S1 to S4. The reasons

reported for these declines were to do with pupils deliberately avoiding PE and opting out of standard grade PE in S3 and S4, therefore, only required to participate in one 60-minute lesson per week (Casey et al., 2014; Inchley et al., 2008).

The literature supports teachers concerns to do with timetabling, and accountability through being measured on performance and conventional academic subjects such as maths and English taking priority over PE (Carse, 2015).

MVPA is Mostly Linked to Sports Only

The participants in the present study were asked their views on young people's PA in childhood and the contribution towards overall level of MVPA (question one: from your own experience, what are your thoughts on young people's MVPA). As highlighted in previous sections, responses implied the following: 1) during early childhood MVPA was mostly achieved through unstructured play activities which then shifted to more structured sports activities as children grow older, 2) as children grow older and progress through childhood, their levels of MVPA declines, and in some instances, stops altogether for those children not interested in sport, and 3) PE during secondary school does not achieve MVPA guidelines.

As mentioned earlier, several participants reported that young people participated in unstructured play activities in early childhood. However, none of the participants reported on unstructured activities during the later stages of young people's development (later childhood, adolescence, and early adulthood), and even though prompts during the interviews were used to highlight active play (e.g., playing tig in the streets) and active travel (e.g., going to the shops or just walking around the local neighbourhood with friends), none of the participants mentioned these activities as contributing to MVPA.

This contrasts with the findings from study two suggesting boys and girls participated in high levels of unstructured PA during these later stages, and which contributes to their daily MVPA. Furthermore, Inchley et al. (2008) supported the premise that participation in unstructured activities (e.g., active travel and active play) can sometimes achieve greater levels of MVPA than other more structured activities such as sport.

Some participants in the present study demonstrated this apparent mind-set that unstructured activities do not achieve MVPA, by implying that if young people are not participating in sport-based activities then they are not achieving sufficient levels of

MVPA, and that teachers find it difficult to find ways to get pupils fit. Lesley and Skye illustrate this as follows:

> Lesley: If pupils are not doing sport are they doing enough physical activity [MVPA]... walking to school is great but is that doing that much for their fitness levels is that really going to help them remain fit if that's all they're doing.
>
> Skye: If pupils are not very good at hand to eye coordination preferring to do play type fun activities instead, it leaves PE teachers with dilemma as to how to get these pupils involved in physical activity that's going to keep them fit.

This idea that by participating in sports achieves greater amounts of MVPA was discussed in study two (p. 107), which argued that MVPA in sport is highly dependent on the type of sports participated in (individual or team), and the player position played – that is; intensity is dependent on player positions. For example, a goalkeeper's PA output will be far less than that of an outfield player (Salvo et al., 2007). Also, this idea that PA (and MVPA) is mostly perceived by some teachers as sport based is echoed by some young people. For example, Malina (2008) reported youths (males and females, aged 11-14 years) perceived PA as being just about sports which was determined by asking the question, *what does the term PA mean to you?* The most common response from both sexes was sport.

Brian commented on the general views held about PA by pupil and teachers, and described the importance of how these views need to change to help youngsters achieve greater levels of PA. Brian comments below:

> There is a kind of myth, a problem with physical activity, that all the activity accumulated must be formalised, organised all the time. Therefore, youngsters are led to believe that physical activity can only be done in a formalised or adult like way, and must be organised and teacher led. Youngsters need to be aware that they can be physically active all the time (not only formalised or teacher led) and they should be made to feel good and recognised those bigger broader ways that they can be active. We (teachers) need to inform youngsters that the other activities, not just the formal sport type activities, but also those activities outside of school (e.g., traveling to school through walking, in the garden, working around the house, playing with friends) are accumulative in terms of physical activity throughout the week, month, year.

Key points:

- Early secondary school is an important period when pupils establish their identities with their peer group. Subsequently, pupils during this time are more exposed to

social anxieties (e.g., social physique anxiety) which for some can have catastrophic effects on their levels of motivation to participate and in some instances, can lead to disengagement from participation altogether. However, some pupils thrive in secondary school PE and view PE as an opportunity to develop their social circles (e.g., friendships).

- Pupils perceive secondary school PE as an arena where they feel exposed to ridicule and humiliation form others, although there are some (mostly those sport orientated) who enjoy performing.
- Secondary school PE is orientated towards sports based activities which is influenced by the curriculum. Subsequently, teachers are focussed on performance outcomes directly associated with national qualifications.
- Most participants believe that the recommended levels of PA (60-minutes of moderate PA on most days of the week) cannot be achieved through just school PE.
- Most participants perceived structured sports-based activities as the most effective PA towards achieving MVPA.

Theme 3: Physical Activity Facilitated Through School PE is Limited by the Curriculum for Excellence

Final analysis of the data brought about the emergence of a third theme which resulted from the generation of codes and categories as shown in Table 6.5 and described throughout the next section.

Table 6.5 Theme 3: Categorisations and themes generated from initial coding

Categorisations	Theme 3
The Broad Nature of PE	Physical Activity Facilitated Through School PE is Limited by the CfE
Delivery of Curriculum PE is Challenging	
Teachers Struggle to Engage (in PE) Those Pupils Not Good at Sports	
School PE Environments Influence Pupils Levels of Engagement	

The Broad Nature of Physical Education

All participants reported that PE is more than just about getting pupils physically active

highlighting other important factors including 1) PE as a connective hub where pupils can make their own decisions, 2) PE as developing holistic individuals (e.g., cognitive and social skills) where pupils deal with their emotions, 3) PE as developing general health and well-being, and 4) PE as developing transferable life skills. This is illustrated below:

PE as a connective hub:

> David: I don't think PE is just about physical activity per se, or sport per se, I think it's much more complex than that - I would describe it as more as a connective hub where people [pupils] can make decisions about their physical activity.

PE as developing holistic individuals:

> Brian: So, we have this idea in PE now that we must develop holistic individual. So, yes, we (teachers) should be developing pupils' physical skills and techniques [mostly sport], but also, we (teachers) should also be developing pupils cognitively - it's not just the doing of activities it also the understanding of where and when to do certain techniques - or the social side of thinking such as how individuals should deal with criticism and how they communicate and deal with issues within groups. Dealing with their emotions... how they should treat other people. So, the wider idea of PE, is not just physical and it's not just about contributing to the quotas (MVPA guidelines). PE also provides confidence skills where pupils can be physically active for the rest of their lives...if PE can help develop the right motivations, capabilities, interests, skills and knowledge...the idea is that they be active in other ways and continue to be active.

PE as developing health and well-being:

> Ben: PE is not about just being physically active all the time... PE is also about learning; health and well-being, what it is to be a good person; handling emotions in different situations so, pupils don't need to be physically active to be learning these contributions.

PE as developing transferable life skills:

> Lesley: PE is more than just physical activity it's about developing lifelong skills and team work interpersonal skills, social skills being able to cope with their emotions.
>
> Sam: The aims of PE are to develop pupil's physical skills but also PE aims to develop pupils as a person and help them understand how they can work with others as in a team. How they can feel positive about learning new skills which can then be transferred to other areas of their lives. So, in PE they might learn how to do a head spring in gymnastics which they are apprehensive, even scared to do, however, they also learn to overcome the fear by practicing and finally achieving the head spring. This experience might transfer into a situation in later years when applying for a job and the interview scares them and they think they can't do it (the interview), but they realize that if they work on certain aspects and practice for the interview then they get through it [the interview].

These factors are consistent with Scotland's CfE which describes PE as contributing to 'inspire and challenge' young people, and so encouraging them to adopt more positive attitudes towards physically active lifestyles, therefore contributing to their overall quality of life throughout childhood and into adulthood (The Scottish Government, 2015). However, as highlighted earlier PE is mostly sports orientated (supported by Scotland's CfE). Therefore, those pupil's good at sports are more likely to engage in PE, thus benefiting from all it offers, whereas those pupils not good at sports are more likely to disengage from PE thus less likely to benefit.

Delivery of Curriculum PE is Challenging

The CfE in Scotland (Scottish Government, 2015) emphasises the importance on establishing and strengthening relationships between schools and out-of-school agencies such as community clubs. By doing this young people to achieve better outcomes such as sustained participation in PA beyond the school environment and beyond the school years. David illustrates this by emphasising schools need to work harder to improve upon such strategies:

> I think the relationship between what young people do in physical activity outside of school and what young people do in physical activity in school is something we really need to work harder at to improve levels [including MVPA]. Traditionally, the school curriculum, not just in PE, has been de contextualized where it has looked mostly into the school setting with the result that what happens outside of school is not linked.

Brian comments on the complexities underlying the relationships between in and out-of-school PA, stressing the influences they might have on each other and

whether one has more influence over the other, and which is the more effective in getting young people physically active. Brian comments:

> Does physical activity lead pupils into sport and lead to pupils being capable at PE, or does PE help pupils to take part in sports outside of school. Or does PE help pupils to be more physically active beyond the school environment. Or is it the other way around, if pupils are physically active, does that lead pupils to PE to be capable or competent and engage more activities. So, there are tensions there as to what comes first and which is more important. What is the relationship? Is it physical activity and PE competing against each other, and does one lead to a smooth transition better than the other in achieving sports participation, or are they completely separate. So, lots of permutations about how sport, physical activity and PE might sit and which is more important etc. This gets talked often about in England ... what is PE about. In Scotland, bigger issues with regards to what PE, physical activity and sport is all about and where they fit...tensions about what is more important.

Lesley comments on the quandary teachers are faced with during the delivery of PE when they are considering the more holistic approach: Lesley comments:

> So, when I teach swimming I will ask if any of the pupils are club swimmers and if there are they will do their own programme however, the argument with doing it this way is that are they doing sport or are they doing PE...and that's where the problem is because if they are doing sport then is PE developing their social and emotional. The answer is no. PE in this example would only be developing a pupil's physical activity.

David reported that PE is the only guarantee that all young people will take part in PA along with benefits to do with health and sport:

> PE is the only place we can guarantee that all young people will get some physical activity, the health elements in terms of physical activity and the sport element; how these are integrated is discussion for the future.

David's comment is consistent with previous research which has suggested that school PE provides young people adopting low active lifestyles, with the only opportunity to participate in MVPA (Hodges-Kulinna, Martin, Lai, Kliber, & Reed, 2003; Trudeau & Shephard, 2005). However, as previously mentioned, and highlighted

in study two (pp. 123-124), there are pupils avoiding school PE such as those pupils not good at sports. Therefore, this idea that all pupils are guaranteed to be physically active through school PE is unlikely. Also, study two showed that pupils are likely to be more physically active out-of-school than previously assessed, through participating in unstructured activities such as walking and playing with friends in the local neighbourhood. This point adds further to earlier discussions suggesting that school teachers under estimate the amount of PA young people accumulate through out-of-school participation (Inchley et al., 2008).

Some of the participants in the present study commented on PE content suggesting that what is being taught in primary school is not preparing pupils properly for secondary school. The participants went on to suggest that this lack of preparation has a direct impact on a pupil's ability to perform specific activities expected in curriculum PE as well as impacting on the quality of PE taught throughout school. This is illustrated by the following participants:

> Skye: secondary school teachers are not sure what's going on in primary schools, they've got they're back up at the moment because primary PE is not being delivered by PE teachers (delivered by outside agencies) and there's an assumption by secondary school PE teachers that impacts on the quality of PE experience which then impacts on the level of pupils' abilities coming in to school.

> Sam: What they're (pupils) are being taught [in PE] at primary school is quite different from what they're being taught at secondary schools. The perception by secondary school PE teachers is that primary school children coming in (starting S1) are not at the level, ability and performance (sports) they (PE teachers) would expect or want them (pupils) to be at.

These findings to do with competence were highlighted in study two (pp. 149-150), which suggested that reasons children avoid PE were to do with psychological factors such as motivation to participate (e.g., low intrinsic motivation) and issues related to 'self' (e.g., self-esteem and self-awareness). The sources of these behaviours were linked to pupil's lacking the necessary competences to perform a specified PA in school PE. These issues to do with competence and pupils' avoiding school PE, were previously highlighted by the Scottish government which predicted that those pupils not acquiring the necessary 'basic moves competences' in early primary school, such as ball catching, would struggle to continue to participate in PE during later primary and

secondary school (Scottish Executive, 2004, p. 27).

Okely, Booth, and Chey (2004) provided an explanation for why some young people are incapable of achieving 'basic moves competences.' They investigated body composition and the fundamental movement skills performed in school PE, and found that children categorised as overweight were incapable of achieving fundamental movement skills, which, then left them unable to perform these same fundamental movement skills in adolescence.

In an out-of-school context, Mckenzie et al. (2002) carried out a longitudinal study investigating children's basic movement's skills as a predictor of their future participation in PA. Their findings suggested that 'basic movement skills' in childhood did not predict habitual PA in adolescence. Indeed, Collins, Martindale, Button, & Sowerby (2010) showed that participation is more than just movement skills on its own, suggesting that it is a combination of physical and mental skills.

Teachers Struggle to Engage Those Pupils (in PE) Not Good at Sports

Several participants reported key reasons for pupils' non-participation in sport-based activities in PE were to do with the lack of PE teachers, and that by providing additional teachers would help to support those pupils to participate in not just other sports, but also in other areas of the curriculum to do with health and well-being. Lesley illustrates this as follows:

> There are problems with boys and girls not wanting to participate in sports e.g., run around a rugby pitch, what do you do with a cohort of 100 pupils in core PE that aren't interested and have only 4 PE teachers. In the ideal world, there would be an extra member of staff to take those pupils not wanting to do PE on other health and wellbeing special course however, that's an ideal world and we all know there is no ideal world and that head teachers don't have the funds so they're not going to provide the extra PE teacher.

Lesley also said that teachers have difficulty in coming up with alternatives to keep pupils' active when they lack the necessary abilities such as eye to hand coordination skills, which are required during school PE. Lesley comments:

> Lesley: If pupils are not very good at hand to eye coordination in activities such as sports, it then leaves PE teachers with dilemma as to how to get these pupils involved in physical activity that's going to keep them fit.

David identified that problems to do with PE delivery and engagement are closely linked to individual pupils' needs which are not being addressed properly.

> In terms of pupils' activities in PE, learning needs to be tailored to individual pupils' abilities however, this is very problematic and has not been done effectively.

Sam reported that although PE is mandatory pupils cannot be forced to take part, therefore, teachers are limited by what they can do to help engage pupils to participate:

> PE teachers can't force pupils to take part. PE during S1 and S2 is a mandatory part of the curriculum but they (pupils) can't be forced to take part. So, if refuses (to take part) what are PE teachers supposed to do. PE teacher can send them (pupils) to detention, speak to their parents... even if these measures work it's still tough on the pupils because they then feel forced to take part in something they don't want to do... and even though they may be in the PE lesson they may only just stand there, during basketball, but not engage so they are not doing anything.

Brian commented that pupils learn through other pupils that PE is optional whereby they can avoid participating in PE without consequences:

> As soon as one pupil sits out the PE class it becomes an option for other pupils to do that too… pupils will conspire together where some will say there not going to do PE therefore influencing others to do the same.

Furthermore, Brian went on to comment that its more socially acceptable (within the school domain) for girls to avoid participating in PE compared to the boys where he implies a sense of male bravado is linked to PE and sport:

> It's more socially acceptable for girls not to want to do PE or sport, socially that seems to be OK for a girl; but for a boy not to like sport or not to do sport or PE, that's not always socially acceptable. It's not cool for pupils to say they don't like PE especially for boys; some boys may not want to say to a

teacher they feel scared to play rugby.

This avoidance by girls to participate was emphasised by David who implied that girls' participation in PE suddenly declines during early secondary school. David comments as follows:

> There is a significant drop off in adolescent girls [particularly in early secondary school] in the whole area of physical activity.

These concerns to do with participation is supported by Lewis (2014) who showed that some pupils don't want to participate in PE due to the controlling way PE is enforced through schools. Lewis (2014) found that pupils' autonomy and enjoyment were higher during after school activities, which was linked to the same teachers being less controlling. Moreover, comments suggesting pupils avoided PE in secondary school is consistent with the findings from study two (p. 123), and from other research investigating school children's PA, where it was also found that girls were affected by higher levels of self-consciousness leading to higher declines in PE than boys (Casey et al., 2014; Inchley et al., 2008). Casey et al. (2014) also demonstrated that the reasons for this avoidance in PE was linked to high levels of self-consciousness (body image).

Some participants commented on PE content suggesting that what is being taught in primary school PE is not preparing pupils properly for secondary school, and this lack of preparation has a direct impact on pupil's abilities to perform specific activities expected from curriculum PE, as well as impacting on the quality of PE taught throughout schools. This is illustrated by the following participants:

> Skye: secondary school teachers are not sure what's going on in primary schools, they've got they're back up at the moment because primary PE is not being delivered by PE teachers (delivered by outside agencies) and there's an assumption by secondary school PE teachers that impacts on the quality of PE experience which then impacts on the level of pupils' abilities coming in to school.

> Sam: What they're (pupils) are being taught [in PE] at primary school is quite different from what they're being taught at secondary schools. The perception by secondary school PE teachers is that primary school children coming in (starting S1) are not at the level, ability and performance (sports) they (PE

teachers) would expect or want them (pupils) to be at.

School PE Environments Influence Pupils Levels of Engagement

Several participants commented on the differences between primary and secondary school describing how pupils perceive primary school as a safe and less performance orientated PE environment compared to secondary school, and that the transition period (from primary to secondary) brings about many changes such as greater numbers of teachers and the increased size of building in secondary school, which effects pupils in different ways.

> Brian: Lots of the kids like primary school PE because it's a safe environment [non-threatening e.g., not having to performing in front of others... during primary school there is less emphasis on performance and achievement [compared to secondary school] and more on participation and getting involved in the activities.

> David: primary school pupils will transition from having one school teacher in primary school to perhaps having 14 teachers in secondary school, from small buildings in primary to building that are huge. So, it's obvious that that cultural shift for some pupils will be for some cool, but for others, it can be nightmare because they are going from being top of the pile in this smaller primary school, to all sudden being the youngest in a much larger school where the rules are different and they are constantly moving between different teachers.

Sam suggests creating a more pupil friendly environment will go some way to help pupils feel safer during school PE:

> It's more about how the PE teacher creates the environment in secondary school. So, the PE environment could be created so its I bit more socially safe for young people where they learn to respect each other and they know they're not going to be mocked by their peers. So, things like a derogatory comment made by one pupils against another during a lesson is not just going to be brushed under the carpet and will be dealt with properly.

Skye commented on issues to do with PE delivery highlighting that teachers focus on performance outcomes rather than on individual pupil needs.

> There are issues to do with delivery; often PE teachers are not driven by the individual pupil, they are driven by content, and maybe by performance, and performance outcomes. I think that's what drives teaching approaches and that's what can disengage a lot of children from participating in PE.

Skye went on to describe the problems associated with current PE environments pointing out that although PE needs to be about performance outcomes, if it was to be better set up, then pupils would have a better experience. Skye comments as follows:

> Performance is about outcomes but depends on how the teacher teaches it. So, if the teacher sets it up so that it's about pupils trying to beat somebody else [competing with other pupils] or comparing pupil performances, or putting pupil performances on public display the focus then is always on the outcome rather than the learning that can be problematic for pupils [causing pupils to avoid PE]. It must be about performance, because PE is about performing, but how its taught, how its delivered... it can be done in a way that can make that experience [performing a sport in a public domain-in front of other pupils/teachers] more comfortable for these pupils [not comfortable performing].

Sam reported pupils would benefit from a PE climate geared towards a more task orientated climate:

> Once pupils will really enjoy the feeling of being active, the feeling of mastering a skill they've worked hard on-they've worked hard on practicing a head stand for several weeks and they do it, that's a great sense of achievement for them.

This is supported in the literature which suggests performance orientated or outcome-based climates can have serious negative motivational consequences that can lead to maladaptive learning behaviours in a PE setting (Kavussanu & Roberts, 2001; Wang, 2010). Whereas, mastery or task-orientated climates can foster improved participation in school PE (Carpenter & Morgan, 1999; Moy, Renshaw, & Davids, 2015; Sproule et al., 2007). Sproule et al. (2007, p. 1038) defines mastery (or task) orientated climate as:

> 'one in which self-referenced improvement and effort are made prominent by the teacher and success is defined as improving one's personal best achievements. In contrast, when a performance climate prevails, the teacher

> encourages normative comparisons and pupils' success is judged in relation to the performance of others.'

This is explained by Nicholls (1984) who postulated through achievement goal theory, that performance orientated, or performance learning outcome climates are ineffective towards learning because people don't like showing their incompetence in front of others. Furthermore, this theory is closely linked to SDT (Ryan & Deci, 2002). For example, ego-orientation is linked to extrinsic motivation whereas task orientation is linked to intrinsic motivation. Therefore, in a sport and PE context, SDT suggests those people extrinsically motivated to participate (e.g., through ego-orientated learning climates) are more inclined to disengage from participating than those people intrinsically motivated (e.g., through task-orientated climates) (Biddle, Soos, & Chatzisarantis, 1999).

In the present study, it was highlighted that the transition period from primary to secondary school is a crossroads for all pupils which for some can be a particularly challenging period (Hanewald, 2013). Hanewald identified through analysis of literature that the implementation of well-planned programmes is necessary to support pupils and teachers during the transitions stages. Also, studies looking at academic engagement have mostly reported autonomy supporting strategies as being the most effective over the more structured strategies, in achieving enhanced classroom engagement and providing positive educational outcomes (Occhino, Mallet, Rynne, & Carlisle, 2014; Reeve, 2009; Jang, 2008). However, more recently, Jang, Reeve, and Deci (2010) reported positive correlations between autonomy support and structured strategies suggesting both can work together providing effective academic learning environments.

Key points:

- School PE is designed to be multi-faceted by providing a holistic approach to young people's development through the provision of more than just the physical elements (e.g., not just about PA guidelines). Nevertheless, unless pupils are sporty, they are less likely to benefit from all that PE has to offer.
- There are some pupils that avoid secondary school PE, so this idea that PE guarantees all pupils will participate in MVPA is unlikely. The underlying reasons for pupils avoiding PE appears to be associated with key psychological factors (e.g., low intrinsic motivation).

- Primary school PE does not prepare pupils for secondary school PE.
- The secondary school PE environment is performance orientated influenced by certification, therefore, more orientated towards performance outcomes (i.e., national qualification) rather than about individual needs.

Further Discussion and Conclusion

The purpose of this study was to carry out a qualitative investigation focusing on the perceptions of Scottish PE teachers, knowledgeable on policy issues, active in the development of future teachers, and with experience in working alongside young people within a Scottish context. By studying PE teachers in this way, it is hoped to further understand the nature of PA in young people within a Scottish context and why some youngsters are not achieving the recommended PA guidelines (The Scottish Government, 2016). Also, this study looks to explore further the motivational influences on young people's PA and the extent to which factors such as SES and significant others (e.g., parents, teachers, etc.) may affect participation.

In the present study, findings and concepts emerged as three themes. Theme-1: Previous experiences and attitudes influencing behaviours towards PA participation, Theme-2: The nature of sport and MVPA in secondary school PE, and Theme-3: PA facilitated through school PE is limited by Scotland's CfE. Each of these themes emerged from lower level concepts, or categorisations shown at Tables 6.3, 6.4, and 6.5.

The findings demonstrate that family members (mostly parents) in early childhood influence how their children identify with PA particularly sport, and that these influences tend to be gender based leading young people to participate in only certain activities such as football for boys, and dancing for girls. This is consistent with the research suggesting that parents strongly influence their children's beliefs and PA outcomes (Fredericks & Eccles, 2005; study two). Also, early experiences (during childhood, primary school years) contribute towards shaping young people's attitudes towards PA particularly in secondary school PE, and that those young people not having the necessary experiences to participate (e.g., skills and abilities), potentially find secondary school PE as a threatening (e.g., from peers and the compulsory nature of PE) and an unenjoyable environment, which can then lead to pupils avoiding participation altogether. SDT supports this finding by suggesting that if any of the 'basic psychological needs' (i.e., competences to perform activities during in school

PE) are not met then intrinsically motivated behaviours to participate will diminish (Deci, 1985). Other research suggests declines and complete drop-out from school PE are directly linked to a pupil's lack of ability, being ridiculed, and having to participate in compulsory PE (Owen, Astell-Burt, & Lonsdale, 2013). Study two showed that as soon as pupils become legal adults (aged 16) they take part in school PE because they want to, and that this was associated with school PE no longer being compulsory, and that pupils are treated more like adults by the teachers. This voluntary participation by pupils coming of age is explained by SDT (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997) as satisfaction of their 'basic psychological needs' (e.g., pupils willingly choose to participate), and by Lewis (2014) who reported teachers controlling behaviour was responsible for some pupil declines in secondary school PE.

The present study showed that barriers influencing young people's non-participation in sports activities prevented them from gaining important experiences perhaps required for activities associated with, for example, school PE. These barriers included lack of opportunities, financial limitations, and lack of transport which were all found to be associated with lower SES. This finding is supported in the literature which suggests levels of PA particularly in sport, was directly linked to paternal support (financial and transport) and family affluence (Inchley, Kirby, and Currie, 2008; Currie et al., 2010). The present study also revealed that levels of experience in sport based PA is a major factor towards levels of engagement in school PE where pupils less experienced in sports are more likely to avoid PE than those more experienced who are more liable to thrive.

The findings suggest that pupils perceive school PE as an environment where they feel exposed to ridicule and humiliation from other pupils, which may well be perceived by some, mostly those good at sport, as an opportunity to enhance their self-esteem amongst their peers through demonstrating their skills and abilities. Early secondary school (particularly in S1) appears to be an important period when young people establish their identities amongst their peers. Subsequently, young people are more exposed to social anxieties (e.g., social physique anxiety), which, for some, can have catastrophic effects on their levels of motivation to participate leading to avoidance and even complete disengagement from PE altogether. The literature suggests that pupils feel exposed in secondary school PE (Inchley et al., 2008) particularly in activities such as swimming (Waters et al., 2012). Other research has associated self-concept in early adolescence as having negative consequences on

behaviours and performance outcomes (Crocker et al., 2001; Crocker, Sabiston, Kowalski, McDonough, and Kowalski, 2006), and is particularly prevalent during early secondary school PE (Taylor, Spray, & Pearson, 2014).

When considering recommended PA guidelines, the present study suggests that a one-hour school PE session is not equivalent to one-hour of MVPA, therefore, school PE cannot facilitate sufficient levels of MVPA. This contradicts HLS, 2015 (The Scottish Government, 2015), although is supported in study two, and is consistent with other research suggesting only low amounts of MVPA can be achieved during each PE session (Malmeleira, 2012; Warburton & Woods, 1996; Waring et al., 2007). According to the literature (Casey et al., 2014; Inchley et al., 2008), and the findings from study two, participation in secondary school PE declines from S1 to S4. This suggests the recommended guidelines are even less likely to be achieved during later secondary school years.

Findings suggest that even though school PE is designed to provide pupils with more than just PA such as health and well-being awareness along with other transferable skills (CfE, Scottish Government, 2014; MacLean et al., 2015; Weiler, Allardyce, Whyte, & Stamatakis, 2014), as highlighted earlier in this study, there are many pupils not benefiting because they are not good at sports and perhaps not interested anyway, therefore, don't have the necessary experiences (and competence) to participate. Findings also suggest that primary school PE does not prepare children for secondary school PE. Also, the secondary school PE environment is performance orientated influenced by certification (national qualifications), and as such, is more orientated towards performance outcomes rather than about individual needs. SDT suggests those people extrinsically motivated to participate (e.g., through ego-orientated learning climates) are more inclined to disengage from participating than those people intrinsically motivated (e.g., through more task orientated climates) (Biddle, Soos, & Chatzisarantis, 1999). Therefore, based on SDT, those pupil's participating in secondary school PE for reasons linked to being experienced and good at sports, will most likely disengage from these activities once the external contingent (e.g., the certification) has been removed and once they leave school. Findings suggested that PE teachers feel under pressure to achieve the aims and purpose of PE, and that this was mostly associated the points already highlighted (e.g., to achieve MVPA guidelines and engaging pupils in PE).

This study has demonstrated that 'national qualification' orientated PE

guidelines can place pressure on teachers to deliver sport orientated PE to pupils, many of whom are not properly prepared to participate. This has important practical implications particularly as it is not clear how necessary or useful the pressure of certification is anyway. For example, Yli-Piipari (2014) highlighted that in Finland, assessment of student learning in PE is based on teacher-made tests, not externally standardised tests. Also, there is a strong philosophy around formative assessment, where tests are used as opportunities for student learning and supporting teacher work rather than to assess achievement. This flexible accountability is credited to have had a major positive impact on the learning environment in Finland (Yli-Piipari, 2014). This has implications for policy and practice, and future research that investigates the efficacy of this approach in other contexts would be welcome.

These findings add further to the premise that in addition to a breadth of effective early PA experiences motivational climates are especially important during learning environments such as in secondary school PE (Morgan & Kingston, 2010). In helping to reduce declines in participation, pupils should be differentiated based on their individual experiences and provided balanced opportunities in particularly secondary school PE. This could be achieved through effective learning and motivational climates such as mastery orientated and autonomy supporting strategies (Carroll & Loumidis, 2011; Soenens & Vansteenkiste, 2005), which would benefit engagement through improved psychological factors (Morgan & Kieran, 2010), and that young people will continue to be physically active throughout adolescence and into adulthood.

Motivational climate research has demonstrated the benefits of adopting a more task (rather than ego) orientated learning environment (Goudas & Biddle, 1994). For example, mastery or task-orientated climates have been shown to lead to more adaptive learning styles and subsequently, improved outcomes such as enjoyment and participation (Carpenter & Morgan, 1999; Sproule et al., 2007). Indeed, the participants in this study highlighted the need for PE to be more pupil friendly, with teacher delivery focusing more on positive learning experiences for all rather than on the performance outcomes. These results connect strongly to the types of task-oriented learning environments suggested by motivational climate research (Carpenter & Morgan, 1999; Sproule et al., 2007; Wang, Chia Liu, Chatzisarantis, & Lim, 2010). There are clear features of task-oriented climates, which have been used to develop TARGET (Task, Authority, Recognition, Grouping, Evaluation, and Time) guidelines

(Ames, 1992a; 1992b) to help practitioners improve their learning environments. Research has also shown that it is possible for teachers to successfully change their motivational climate through their teaching approach (Gray, Sproule, & Morgan, 2009).

Given the suggested vague nature of Scotland's CfE and the apparent confusion over the aims and consensus for PE teachers, research has suggested that for young people in schools across the country to benefit from more consistency in PE (including more time in MVPA), the CfE should provide a more standardised curricula. By doing this would then provide PE teachers with standardised lesson plans designed to promote activity, and facilitate better PE (Bassett et al., 2013).

Limitations to this Study

Although all of the participants had experience in working within school PE, only two participants had taught as permanent members of staff (in school) during the last two years prior to commencement of this study. This extended period away from schools by some of the participants may have impacted on the results of the present study, where some of the views and opinions of the participants were likely based on their experiences as teachers working in schools from many years ago. Therefore, some of the information provided by the participants would have been dated through them not being current in areas associated with, for example, delivery of schools PE and pupil attitudes and behaviours towards PE. Also, all the participants were experienced from a position of working with young people in mostly PE and a mostly sports oriented context. By working with others working in the field of young people's PA (e.g., youth and community leaders working with young people from various SES backgrounds) would have helped to further understand the 'nature of PA in young people within a Scottish context,' a recommendation for future research.

CHAPTER SEVEN – General Discussion

Chapter Outline

Due to the layout of this thesis, the findings for each of the three studies have been discussed in-depth in each of the respective chapters. The primary purpose of this final chapter is to integrate the findings from these three studies into an overall summary with regard to the overarching aim of 'investigating the nature of physical activity (PA) in young people within a Scottish context.' This chapter reflects on the research aims and associated studies (specified below) of the thesis and provides a summary of the main findings, including the strengths and contribution to the field related to policy, practice, and research. The limitations of each of the studies in this thesis are also explored.

Overview of this Thesis

This thesis provided a mixed methods approach (one quantitative and two qualitative studies) to 'investigate the nature of PA in young people within a Scottish context.' The aims of this thesis were as follows:

Aims:

1. To investigate young people's participation in PA (structured and unstructured) and associated motivations.
2. To investigate the nature of young people's PA participation experiences (structured and unstructured) and associated motivational influences, through the perceptions of physical education (PE) professionals.

These aims were met through the following studies:

Studies:

1. To investigate using quantitative research, the frequency of weekly club activity sessions and motivational factors in a sample of 133 young people from high and low socio-economic status (SES) backgrounds within a Scottish context.
2. To investigate using qualitative research, the PA experiences across the childhood and adolescent development stages of 18 Scottish youths from a low

SES catchment (all of whom volunteered to participate in a secondary school PE and recreational programme).

3. To investigate using qualitative research, the nature of PA in young people and associated motivational influences within a Scottish context, from the perspective of six qualified Scottish PE teachers, knowledgeable on policy issues and active in the development of future teachers.

In addressing aim one, the review of literature presented in chapter two explored six key areas:

1. Why PA is important in young people?
2. PA levels in young people and the concerns this raises;
3. The measurement of PA in young people;
4. The Importance of understanding the influences (correlates) on young people's participation in PA;
5. What are the correlates of PA in young people?
6. Using the self-determination theory framework to help further understand PA in young people.

Chapter two highlighted that reported levels of PA in young people in Scotland are low (Tremblay et al., 2014), and given the associated benefits for health and future participation, this is concerning. The review of literature also highlighted the challenges associated with the practicalities, validity, and reliability of PA measurement and the inconsistency with which studies report PA (e.g., age ranges, SES groups and regions). This leads to ambiguity across studies. The behavioural epidemiological framework (Sallis & Owen, 1999; cited in Biddle & Mutrie, 2008) highlights the importance of taking a systematic approach to understanding PA to inform interventions and policy. In relation to PA behaviour, the most promising models (e.g., socio-ecological model) highlight multiple influences including individual, interpersonal, environment, and regional or national policy factors. Finally, the self-determination theory (SDT) was presented as an important framework to help further understand young people's motivation within a PA context. While the rationale for study one emerged through personal interest (as discussed in the reflective commentary section in study one, p. 76, and later in the general discussion, p. 232), it was clear from the literature that further

investigation of PA in a Scottish context was important. Study one focussed on understanding structured PA of young people within a Scottish context, specifically investigating the frequency of club activity sessions and factors associated with SDT across SES (higher v lower) and gender.

In further addressing aim one, findings from study one (chapter three, pp. 69-70) showed that the main predictor of weekly club activity sessions was SES (albeit with low predictive variance). Specifically, young people from higher SES backgrounds participated in significantly more club activity sessions (school and out-of-school) than those from lower SES backgrounds. For weekly school club activity sessions, SES was the only predictor of club participation. However, for out-of-school club activity sessions motivational factors, perceived competence, and intrinsic motivation, were also found to be important predictors. For gender, there were no significant differences in levels of participation in club activity sessions. Study one has reinforced previous work showing the importance of SES and motivation on participation in structured PA. Also, it highlighted the need to use research methodology that can better capture some of the complexities related to PA participation. On reflection, it was also clear that PA needed to be examined from a broader perspective than just frequency of club activity sessions.

Given this complexity, and acknowledging the pros and cons associated with different research methodologies, chapter four set out to explain the logic, rationale and validity in using mixed methods in this thesis. In identifying two approaches to data collection through self-report questionnaires and semi-structured interviews, the overall thesis proffered to claim that collectively these would provide a better understanding of the nature of PA in young people. Following on from this, and given the lack of qualitative research investigating the PA experiences and associated motivations in young people from lower SES backgrounds within a Scottish context, study two was designed.

In addressing aim one, chapter five (study two) presented the results from an investigation into the PA experiences across key development stages (i.e., childhood; adolescence, and the newly identified early adulthood stage) in a sample of Scottish youths (from low SES) and was achieved through semi-structured interviews. Study two demonstrated that young people from low SES backgrounds participate in a variety of different types of PA across childhood, adolescence, and early adulthood. The findings also showed that youngsters' previous experiences in early childhood are important towards their participation in future activities (mostly structured sports based)

particularly in adolescence. For example, those young people less experienced in structured sports-based activities were more likely to have problems in school PE than those more experienced. Subsequently, while some young people embrace school PE (e.g., those with experience in sport), others perceive PE as threatening, which can lead them to avoid or drop out from PE altogether. This was an important finding because, for many young people (particularly those from lower SES), school PE may be the only opportunity for them to participate in structured sports type PA. It was clear from study two, that school PE played an influential role in the PA experiences of young people within a Scottish context. This is important given that PE is a setting in which all young people are required to participate. Further, PE professionals have by qualification, a knowledge base and interest in sport and PA, are often involved in community sport or PA initiatives, and are likely to have a broader understanding of the complexities of PA. Therefore, study three aimed to investigate the nature of PA in young people and associated motivational influences within a Scottish context from the perspective of six qualified Scottish PE teachers, knowledgeable on policy issues, and active in the development of future teachers.

In addressing aim two, chapter six (study three) also drew on qualitative enquiry using semi-structured interviews and present the results from the participants investigated. Study three showed that family influences (mostly parents) and SES were key towards the formation of young people's attitudes and behaviours towards PA, particularly in sports. Young people from low SES backgrounds were less likely to participate in sports activities, thus preventing them from gaining the necessary experiences (and competencies) needed to take part in many of the school PE activities (which were mostly sport dominated). Indeed, secondary school PE is perceived by many pupils as threatening, subsequently leading them to avoid PE altogether. It was clear that PE teachers had significant challenges delivering PE to cater for the needs of all learners with a broad range of abilities. The role of the motivational climate in PE was also shown to be particularly vital towards ensuring good experiences for all pupils. Implications relating to Scotland's curriculum for excellence were apparent.

Key findings, and in-depth discussion emerging from the thesis are integrated and presented below. Specifically, discussions are most relevant to a Scottish context, in relation to the nature of PA in young people, associated motivations, and the challenges of secondary school PE in Scotland.

The Nature of Physical Activity in Young People

Structured physical activities. Study one showed that within a Scottish context, young people from higher SES participated in significantly more club activity sessions than those from lower SES (in, and out of school). The opinion of the participants in study three also showed that young people from lower SES backgrounds were less likely to participate in sports-based PA. This was related to issues such as lack of opportunities, parental support, finances, and transport which have all been highlighted as barriers to PA (including structured sports) in the literature (Mota, Gomes, Almeida, Ribeiro, & Santos, 2007). However, the low levels of predicted variance of club activity sessions in study one (i.e., 5% to 27%) highlighted the need to recognise further the complex, multi-factor influences on participation levels (e.g., as illustrated through the social-ecological framework, chapter one, p. 35). Nevertheless, these findings from studies one and three reflect much of the research across different cultural contexts suggesting that young people from affluent families are more likely to participate in structured activities than those from less affluent families (Inchley, Kirby, & Currie, 2008; Mota, Gomes, Almeida, Ribeiro, & Santos, 2007; Vandermeerschen & Scheerder, 2015).

Previous literature highlights that girls participate in less structured sports-based activities throughout their youth than boys (Currie et al., 2011; Craggs, Corder, van Sluijs, & Griffin, 2011; Telema et al., 2013; Vilhjalmsson & Kristjansdottir, 2003). In contrast, study one showed that there were no significant differences between boys and girls levels of participation in club activity sessions within this specific Scottish context, and as such, warrants further investigation. While study two did not quantify the levels of structured PA, gender differences were found for the type of participation. For example, the results showed that across childhood and adolescence, more girls participated in 'various structured activities' than boys (67% and 56% respectively) and more boys 'identified with a main sport' than girls (62% and 33%). In studies two and three, gender was found to influence the types of sports that young people participated. Findings also demonstrated that certain activities are perceived as being either masculine or feminine (e.g., by parents and young people) within this Scottish context. As such, parental, social, and cultural values can influence the way in which young people choose to participate in, for example, secondary school PE (factors influencing participation are discussed further later in this chapter, pp. 215 - 219). Also, study two showed that those young people who 'identified with a main sport' may have had stereotypical gender perceptions (influences) of sport because all the boys identified

with football and all the girls identified with dancing. The literature supports these findings suggesting that gender stereotypical perceptions influence a young person's sports participation and that families, particularly parents play an important role in this (Birchwood, Roberts, & Pollock, 2008; Wheeler, 2011). More research investigating the role of parental, social, and cultural values is warranted within our developing society.

Study two showed a typical drop off in structured activity participation from childhood to adolescence which was in agreement with other research (e.g., Currie et al., 2011). In contrast to much of the literature (e.g., Inchley et al., 2008) this decline was greater for boys than girls, again an area requiring further investigation. Study two also showed that those children who 'identified with a main sport' in childhood were more likely to continue to participate into adolescence, highlighting that the nature and motivation of the sports experience is important for adherence (discussed later in this chapter, pp. 215-216). The relevance of this may go beyond structured activity participation, as research has shown that although sports participation does not ensure young people meet recommended MVPA guidelines, it has been shown to be correlated with overall PA throughout childhood and adolescence (e.g., Telford et al., 2016). The way in which identity may facilitate adherence would seem to be an important area for further research.

Other potential consequences of a lack of structured sports-based activity participation in childhood were identified in studies two and three. Both studies suggested that young people were lacking the necessary experiences and therefore the competencies to take part in sports activities. Subsequently, those young people falling into this category were more likely to struggle with PE in early secondary school (this is discussed later in this chapter, p. 216). This aligns with previous research, which, has shown that many pupils have issues with participation in secondary school PE following this transition (Brooke, Corder, Griffin, & Sluijs, 2014; Waters, Lester, Wenden, & Cross, 2012). Research also explains that these issues are often attributed to a lack of experience in structured sports-based activities (Coakley & White, 1992) (issues linked to PE are discussed later in this chapter, p. 216). These findings have practical implications for those involved in providing physical competency experiences to young people throughout childhood (e.g., parents, sports coaches, and primary PE).

Unstructured physical activities. Through acknowledging the inherent limitations within study one (discussed in chapter three, pp. 73-76) and later in this

chapter, pp. 231 - 235), it became clear that it was important to investigate PA more broadly. As such, studies two and three used a qualitative research methodology, with an open investigation into PA, without constraining definitions such as 'structured sports clubs.' This approach helped to better understand the holistic nature of young people's PA across the childhood and adolescent development stages within a Scottish context. One of the main findings from study two suggested that young people from low SES backgrounds participated in a variety of different unstructured activities. Building on previous definitions of unstructured PA (Biddle & Mutrie, 2008), active travel (AT) and active play (AP) were both better expressed into two domains (AT-1 and AT-2; AP-1 and AP-2 - see chapter five for definitions, p. 104). This finding adds to the previous literature suggesting that better clarity and definition are required for young people's unstructured PA (Tremblay et al., 2014).

Also, study two showed that young people's PA could be categorised into three development stages (childhood, adolescence, and early adulthood stages and are discussed in chapter five, p. 102). The literature identifies with the childhood and adolescent stages (Education Scotland, 2014), however, not the 'early adulthood stage.' This third stage was categorised in study two due to an increased level of pupil responsibility and autonomy apparent within the Scottish school system, which was found to be related to a person's legal capacity, which, in Scotland is aged 16 years (Age of Legal Capacity [Scotland], Act, 1991).

Study two also indicated that different activities were more pronounced at different stages. For example, active play in the playground (AP-1) was only relevant in the childhood stage, while active play out-of-school (AP-2) was still relevant for boys into adolescence. On the other hand, active travel (in, and out-of-school) was found to be relevant during all of the development stages (i.e., childhood, adolescence, and early adulthood), however, gender differences were found. Boys experienced a drop in active travel (AT-2, out-of-school) in adolescence perhaps because they undertook more active play (AP-2, out-of-school). Unlike the boys, girls experienced a drop off in active travel (AT-1, to and from school) in adolescence. Importantly, some of these unstructured activities identified in study two were not recognised as 'contributors towards MVPA' by some of the participants in study three. They seemed to imply that recommended MVPA guidelines can only be achieved through structured sports activities. The literature clearly outlines the contributing role that unstructured activities can have towards MVPA (e.g., Biddle & Mutrie, 2008). As such, this

misunderstanding highlights the extent of the challenges that exist in the promotion activity that contributes to recommended PA guidelines.

These aspects of unstructured PA emerging from study two (i.e., AT-2 and AP-2) are not often clearly identified or measured in the self-report literature. However, any interpretation or generalisation of these findings should be viewed with caution. This is due to the sampling in this study (e.g., participants were all motivated to choose PE and recreational studies in S5) and also the fact that studies using more objective measures of PA (e.g., accelerometers) report low levels of PA in these populations. While there are limitations to the methodology used in study two, using such methods does allow a greater understanding of the context in which PA may take place, which is an important element of understanding the nature of PA habits, and therefore may help to inform effective PA promotion interventions. As such, it would be sensible for future research to continue to utilise, and improve the way in which it captures the duration and intensity of PA, and also the type of PA and context in which it takes place in an integrated fashion.

Understanding the behavioural factors and context of PA more broadly is an important consideration and potentially most relevant to those young people from low SES who may engage in more unstructured activities such as AT-2 and AP-2. Future research also needs to clearly delineate PA levels in different groups of young people. For example, much of the research in Scotland mostly report on young people from mixed SES and mixed locations (e.g., Currie et al., 2015; Inchley et al., 2008). Whereas, by reporting on SES and location more specifically (e.g., low SES young people from suburban backgrounds), would help to more accurately develop our understanding of the nature of PA levels across different populations. Further, given the variation of unstructured PA levels found across age, gender and the developmental stages in study two, due consideration should also be given in future research towards consistently reporting these variations (age, gender, and developmental stages), and also the role that unstructured PA may have in future PA participation.

Studies one and three highlighted that young people from lower SES backgrounds participated in less structured activity. While research identifies barriers to participation in structured activities for young people from low SES backgrounds (Inchley et al., 2008), different socio-demographics may play a role in whether young people participate in more or less unstructured activities. In other words, young people from lower SES backgrounds may have more freedom to participate in unstructured

activities (e.g., AT-2 and AP-2) than young people from higher SES backgrounds. For example, recent research has shown that children given the freedom to play outdoors and travel actively without adult supervision participated in more PA than those who do not (D'Haese, Van Dyck, De Bourdeaudhuij, Deforche, & Cardon, 2015). This is an area for further research. Furthermore, families from lower SES backgrounds may have less access to transport, influencing the extent to which young people have to walk to and from school (Ogilvie, Mitchell, Mutrie, Petticrew, & Platt, 2008). However, it should be noted that circumstances leading to more unstructured activity opportunities may be related to neighbourhood safety and location rather than differences in SES per se. Research has suggested that young people from inner city locations take part in less PA than those from the suburbs (regardless of SES) and that this lack of participation is related to parent concerns for neighbourhood safety (Weir, Etelson, & Brand, 2006). As such, it is important to recognise that the young people interviewed in study two were from a school in a low SES, rural location.

Motivation

SES and parental influence. Studies one and three highlighted that SES plays a key role in structured sport club activity participation, particularly out-of-school. Studies two and three outlined potential reasons for this including transport, parental support, finance and opportunities, supported by previous research (Inchley, Kirby, & Currie, 2008; Mota et al., 2007). Study three highlighted the participants believed that young people with parents showing no interest in PA were less likely to participate in PA (mostly sports). Therefore, research suggests that they would be more inclined to be inactive in overall PA as they get older (Fredrick's & Eccles, 2005). For those young people in study two (low SES), who had 'identified with a main sport' and showed adherence to a sport through childhood, adolescence and early adulthood, familial support played a major role. This included support with transport to and from venues and encouragement during participation. Study two also demonstrated that many parents supported their child by participating with them in several activities (e.g., kicking a football in the park). While research suggests that young people are influenced less by their perceptions of parent participation behaviour (Bauman et al., 2012), and more by the nature of parental support towards young people's participation in sports and other more general PA (Edwardson & Gorley, 2010; Pugliese & Tinsley, 2007), this thesis highlighted both are important. This type of encouragement and

support from family members may well be important for young people's self-determined behaviours and adherence to participate (Gebremariam et al., 2012; Ryan & Deci, 2002). Indeed, study one highlighted the importance of intrinsic motivation and perceived competence for out-of-school club activity sessions.

Previous experience, competence and perceived competence. Study one demonstrated that, along with SES, perceived competence and intrinsic motivation were important motivational factors for young people's participation in club activities outside of the school environment. This finding might suggest that young people participate in out-of-school club activities only when they believe themselves to be good enough and through having a sense of enjoyment. SDT explains this by suggesting that those individuals intrinsically motivated to participate in activity will adhere to that activity providing their basic psychological needs (perceptions of autonomy, competence, and relatedness) are satisfied (Ryan & Deci, 2002).

Study two highlighted that perceived competence (in sports) was linked to previous experience and participation in structured sports activities through childhood. Those young people with lower levels of sports experience were most at risk of low perceived competence, enjoyment, and motivation to participate in structured activities. The nature of sports participation (e.g., identified with a main sport), also may have influenced continued sports participation. These findings from studies one and two, aligned with SDT, may help to explain research showing declines in young people's PA particularly as they grow older (Currie et al., 2015; Inchley et al., 2008).

Studies two and three found that many young people have problems with secondary school PE (S1 to S4), as demonstrated by a lack of enjoyment and engagement, particularly prevalent in PE lessons involving swimming and team games. Findings suggested that a lack of relevant previous experiences or competencies played an important role. Study two also showed that early secondary school is a period when pupils felt most self-conscious. For example, study two went on to discuss that swimming (in PE) is when young people's (mostly girls) self-concept and self-esteem are under the greatest amount of threat, which is supported in the literature (Inchley et al., 2008; Waters et al., 2012). Linking these points together, study three showed that because some pupils do not have the necessary competency (e.g., acquired skills and abilities), they are more inclined to perceive secondary school PE as a threatening environment, especially if they are particularly self-conscious (discussed later in this chapter, pp. 222-226). Subsequently, pupils use avoidance strategies in secondary

school PE (this is discussed further in the next section and also addresses the challenges of PE, p. 222). These findings related participation barriers are broadly supported by the research, which has shown that PA avoidance is associated with low perceived and actual competence, lack of a variety of opportunities and concern about physical appearance (Davison, Scmalz, & Downs, 2010; Waters et al., 2012).

SDT provides an explanation for these findings by underpinning the associated motivations behind young people's behaviours. For example, SDT suggests that as well as an individual feeling incompetent to participate in an activity, if they also have a poor sense of relatedness (e.g., with peers) and very little autonomy (e.g., through the controlled school curriculum during S1 to S4) then their levels of intrinsic motivation (sense of enjoyment) to participate will diminish (Deci & Ryan, 2002). This was found in studies two and three, which as highlighted in the next section (p. 222) demonstrated that those pupils not competent in school PE were humiliated and bullied by their peers and felt that they were forced to participate (through compulsory PE).

Research suggests that autonomous types of motivation are key towards promoting young people's participation in PA (Ng et al., 2012). In contrast, the more controlling types of motivation, such as compulsory school PE, are more likely to cause young people to avoid participation (Owen et al., 2014). The importance of this autonomous type of motivation was shown in studies one, two, and three. More specifically, study one highlighted intrinsic motivation as a predictor of out-of-school structured activity. Studies two and three found that once pupils entered S5 and S6 (i.e., early adulthood, aged 16+), they engaged and adhered to school PE through a sense of choice (of activities they may be competent in), rather than being forced to, which, they previously experienced in S1 to S4.

Studies two and three showed that PE in S5 and S6 provided the pupils with more choice of activity and a greater sense of responsibility compared to when they were being forced to participate in S1 to S4, which may impact on perceptions of competence. Study two also showed that some participants were given the opportunities to assist in teaching younger pupils during PE lessons and that pupil's enjoyed school PE at this time. Study two also suggested that participants chose school PE because they were given the opportunities to participate in less structured PA in PE (e.g., walking and running around the athletics track, and table tennis) compared to the more structured and certified curriculum-based PE activities experienced in S1 to S4.

Previous research and study three, suggested that secondary school PE has an important role in providing opportunities for young people to participate in a range of PA along with other important transferable skills and health and well-being related outcomes (CfE, Scottish Government, 2015). However, the findings in studies two and three suggest that secondary school PE either acts to facilitate (those experienced and competent) or debilitate (those without the experiences and therefore not competent) young people's participation and motivation.

The Challenges of Secondary School Physical Education in Scotland

The challenges of delivering quality PE lead many pupils to perceive PE as threatening. Scotland's CfE was introduced as a newly developed policy initiative designed specifically as a cohesive curricular framework for young people aged 3 to 18. The premise of the curriculum (in a PE context) intended that PE should work collaboratively with sport and PA to help promote participation. Also, the curriculum proposed that alongside this collaborative arrangement, health and well-being awareness along with other transferable skills such as team building, and social interactions should be included as part of pupil education (Scottish Government, 2015). Scotland's CfE was also highlighted by the participants in study three who emphasised that PE is more than just about getting pupils physically active. They stressed that other factors are equally important including 1) PE as developing holistic individuals (e.g., cognitive and social skills) where pupils deal with their emotions, 2) PE as a collective hub, and 3) PE as developing transferable life skills. Other research has also highlighted the importance of health and well-being within the curriculum towards developing young people's awareness of their mental, emotional, social, and physical well-being (MacLean, Mullholland, Gray, & Horrell, 2015).

However, research has suggested that Scotland's CfE is 'vague because of its non-theory-based approach and mix-and-match design' (Priestly, 2010, p. 23). In a PE context, this vagueness in the curriculum has previously been described as having a 'lack of clarity and consensus on the nature of subject intentions' (Thorburn & Horrell, 2011, p. 73). MacLean et al. (2015) demonstrated this 'lack of clarity and consensus' in their study, which identified that 59% of Scottish PE teachers were unsure about the aims and intentions of the curriculum, a point supported previously by Priestley & Humes, (2010). A point to note is that although these findings are supported in the literature (Stolz & Kirk, 2015), historical research suggests that the aims and intentions

of school PE have been contested for many decades. For example, Sharp (1990, p. 21) wrote that an 'attempt to define what the subject [aims of school PE] is all about seems to have plagued the literature for a least 40 years.'

Also, study three showed that Scottish policies (through the CfE) for PE as a provider of MVPA are limited. Some of the participants in this study implied that it was part of their remit to ensure certain levels of MVPA are achieved through PE. The Scottish Governments (2012) strategy to improve participation in young people's PA (accumulated through achieving the MVPA recommended guidelines) included a commitment that by 2014 young people would benefit from two hours of PE per week. Nevertheless, while MVPA is highlighted as an outcome in Scotland's CfE (McEvilly, Verheul, Atencio, & Jess, 2014), guidelines on its implementation are unclear concerning, for example, that schools should facilitate activity towards young people achieving recommended guidelines (at least 60-minutes MVPA up to several hours every day, The Scottish Government, 2016). Scotland's CfE has been described as the 'new breed of national curriculum,' which, is a top-down government-led process initiated through a bottom-up curricular development by teachers (Priestly, 2010, p. 23). This suggests that curriculum PE guidelines such as to 'improve aspects of fitness,' may be interpreted, therefore, implemented by teachers (bottom-up approach through government-led initiatives) to improve young people's MVPA recommended guidelines.

However, the contribution of MVPA through PE appears to be small. For example, studies two and three suggests that there are concerns about the current school PA guidelines within the Scottish context, in achieving sufficient levels of MVPA (i.e., 2 x 60-minutes of PE per week). Study three suggested that most of a one-hour PE lesson is taken up by pupils changing in and out of their PE kit and walking to, and from the sports pitches. This supports previous research which has suggested that PE can contribute as little as 10-18% of MVPA per lesson (Waring, Warburton, & Coy, 2007; Wood and Hall, 2015). There may also be a greater challenge in disadvantaged schools where low MVPA has been attributed to the management time of poor behaviour by the pupils (e.g., Sutherland et al., 2016). Studies two and three have also suggested that declines in PE participation occurred in S3 and S4 which is supported by the research (Currie et al., 2015; Inchley et al., 2008). While the reasons for these declines were unclear in the research (Currie et al., 2015; Inchley et al., 2008), studies two and three suggested that declines were mostly associated with those pupils

choosing not to participate in certificated PE. Research has suggested that there are concerns about the position of PE within health and well-being, and that change initiatives may lead to PE becoming more about fitness (including recommended MVPA guidelines), rather than the CfE policy intentions, aims, and values, which, could all be lost in the process of change (MacLean, Mullholland, Gray, & Horrell, 2015).

While Scotland's CfE framework is central towards bringing about many positive outcomes, based on the findings from studies two and three, and other research (Brooke et al., 2014; Priestly, 2010), it appears that in a curriculum PE context, there are many young people perceiving secondary school PE as threatening. Consequently, this threatening PE environment can lead to low levels of pupil enjoyment and disengagement (in PE) for some (studies two and three). Studies two and three along with previous research (Brooke et al., 2014; Inchley et al., 2008), have demonstrated that the post-transition period from primary to secondary school is when pupils are most affected, therefore, the point at which young people are most likely to disengage from PE. Also, it is likely because of this vagueness in the CfE that teachers struggle to manage many of the problems associated with pupils' disengagement in secondary school PE (studies two and three). Subsequently, pupils not engaging in PE impacts on the curricula policy intention and outcomes that children should have educational experiences (Scottish Executive, 2004; Weiler, Allardyce, Whyte, & Stamatakis, 2014). There are clear practical implications for policy with regard to clarity of aims and associated teacher guidance.

Self-consciousness exacerbates the perception of threat that some associate with PE. Studies two and three demonstrated that early secondary school (post-transition) is when pupils establish their identities and so are concerned about what others (their peers) think of them. Study three suggested that this is an important period which determines a pupil's behaviour and whether they attribute a value to PE, or not. Research suggests that young people are vulnerable to a heightened sense of self-consciousness particularly in early secondary school (post-transition) (Brooke et al., 2014). This heightened level of self-consciousness by young people in secondary school was supported in studies two and three. Other research has shown that these feelings (self-consciousness) experienced by young people is more applicable in girls than with boys. For example, Inchley, Kirby, and Currie, (2011) found that girls' physical self-perceptions noticeably decreased in adolescence (compared to boys) and

that boys' global self-esteem increased (compared to girls). Although study two also found that some boys were particularly affected by feelings of self-consciousness in secondary school PE as well as girls. These findings suggest that by exposing young people to a threatening PE environment, which is when they are expected to demonstrate their abilities (or lack of) in front of others (peers and teachers), can lead to a loss of enjoyment, avoidance, and disengagement (exacerbated by their heightened levels of self-consciousness). An important point to note, is that the impact of having a negative experience in secondary school PE may be the cause underpinning why so many people choose to avoid participating in PA in adulthood (Biddle, Gorely, & Stensel, 2004; Kjonniksen, Torsheim, Wold, 2008; Sallis & Owen, 1999). While this is not a new finding, it again highlights the implication for teachers and schools to be sensitive to young people's emotional development at this time to help maximise engagement.

PE is dominated by sport and favours 'sporty' pupils. Studies two and three showed that secondary school PE is oriented towards sports, therefore, particularly suited for those pupils who are already sufficiently competent and have experience in some form of structured sports-based activities and who enjoy performing. Whereas, for those pupils not good at sports or lacking positive previous experience, and unable to perform the necessary skills to participate properly, school PE is more likely to be perceived as threatening, particularly through the period of heightened self-consciousness and peer comparison apparent during early adolescence. Subsequently, those pupils not good at sports can struggle to engage in secondary PE, and therefore not gain the benefits (CfE, Scottish Government, 2015). These findings from studies two and three also demonstrated that many pupils who lack competence, perceive the PE environment as threatening due to ridicule and humiliation from others (their peers). Study three (p. 195) added that PE 'can be an arena where pupils are on display and are exposed.' Study two provided examples of strategies used by pupils to avoid PE, which included them deliberately not bringing in their PE kit.

However, avoiding PE was not just isolated to those pupils not good at sports. Study two also found that there were some pupils' (experienced in, and good at sports) who were also bullied by their peers, which, subsequently led to them having bad experiences in PE. Previous research has shown that secondary school can be a time where many young people feel humiliated and in some instances, are bullied by their peers. For example, Currie et al. (2011) found that approximately one in ten (9%)

adolescents in Scotland (aged 11-15) reported being bullied two or three times a month at secondary school. What is perhaps a more important concern, is that study three also showed that these bullying behaviours could continue outside of the school PE environment, which, can lead to young people avoiding participation in other PA (i.e., structured and unstructured outside of school).

The role of the PE climate and challenge of catering for individual educational needs. Studies two and three demonstrated that PE is sports performance orientated. Study three highlighted that this climate is facilitated by traditional teaching styles, school resources (facilities and equipment), and recruitment of PE teachers with sport focussed expertise. These findings are supported by the research, which has suggested, for example, that PE teachers felt constrained by traditional sports perceptions of PE held by children and colleagues (Carse, 2015). Indeed, study two demonstrated that secondary school PE mostly consisted of blocks of core sports activities including swimming, netball, basketball, gymnastics, and athletics. Also, when considering PE as contributing to recommended PA guidelines, some of the participants in study three believed that MVPA is best achieved through participation in sports, which, may be another reason that sports mostly dominate PE over the more unstructured activities. However, this heavy emphasis on sport as the vehicle for PE reinforces the bias against those 'non-sporty' pupils. Also, study three showed that secondary school PE is sport orientated because school teachers feel under pressure to deliver 'national qualifications' (curriculum certification), which they also said were performance focussed.

This pressure to perform comes from Scotland's CfE (Education Scotland, 2012; Scottish Government, 2015) that outlines the secondary school PE guidelines, which are mandatory in the early secondary school (S1 to S3, extended to S4 in some schools). Certificated PE starts from S4 in preparation for national qualifications. Also, study three suggested that the national qualifications are mostly assessed through performance in formal sport-based activities. Therefore, these findings suggest that because 'national qualifications' are sport orientated, those young people not experienced nor interested in sports are disadvantaged from the beginning of secondary school PE. Consequently, those youngsters without sufficient experience in sports by the time they enter secondary school are more likely to drop out of PE in S3 when it becomes optional, and therefore less likely to achieve PE certification by the end of their secondary school education. As such, study three shows that the national

qualification orientated syllabus placed pressure on teachers to deliver sport orientated PE to young people, many of whom are not properly prepared to participate. Importantly, this has important practical implications as it is not clear how necessary or useful the pressure of national certification is anyway. For example, Yli-Piipari (2014) highlighted that in Finland, assessment of student learning in PE is based on teacher-made tests, not externally standardised tests. Also, there is a strong philosophy around formative assessment, where tests are used as opportunities for student learning and supporting teacher work rather than to assess achievement. This flexible accountability is credited to have had a major positive impact on the learning environment in Finland (Yli-Piipari, 2014). This has implications for policy and practice, therefore, future research that investigates the efficacy of this approach in other contexts would be welcome.

Aligned with this, and as highlighted earlier in this chapter, study two demonstrated that young people participated in secondary school PE in S5 and S6 partly because they were not being assessed on their performance in the activities chosen. However, it is important to note that this finding may not generalise to other schools, due to the flexibility that was provided within the participants' school sport and recreational PE programme at this stage. Further, even though not all of the participants in study two enjoyed or engaged with PE during early secondary school (S1 to S4), they did however all choose to study PE in S5. As such, the participants in study two are not representative of all secondary school pupils, many of whom would not have chosen PE at this level. Further investigation of the PA and motivations of a broader range of pupils at this stage would be valuable (e.g., school leavers and those who chose other subjects).

For many young people, particularly those from less affluent families, school PE may be the only opportunity they have to participate in structured sport-based activities, an area that needs to be investigated further. For those young people who adopt low activity lifestyles, research has suggested that school PE may be the only opportunity they have to participate in some form MVPA (Bassett et al., 2013; Trudeau & Shephard, 2005). PE in schools has an important role towards facilitating not only MVPA, but also providing young people with opportunities to experience various sports, develop transferable skills, and reach other positive health and wellbeing outcomes, as well as facilitating long-term PA habits (Sutherland et al., 2016). Therefore, maximising enjoyment and reducing the threatening nature of this type of

environment (i.e., secondary school PE) is crucial in allowing education for all, through the vehicle of sport and PA.

Given the suggested vague nature of Scotland's CfE and the apparent confusion over the aims and consensus for PE teachers, research has suggested that for young people in schools across the country to benefit from more consistency in PE (including more time in MVPA), the CfE should provide standardised curricula. By doing this would then provide PE teachers with standardised lesson plans designed to promote activity and facilitate better PE (Bassett et al., 2013). However, studies two and three demonstrated that the underlying issue may well be more to do with the nature of the climate of PE and the way it is taught, rather than its content. For example, both studies showed that some of the reasons responsible for pupils (S1 to S4) not enjoying and sometimes disengaging from secondary school PE, was because of the controlling nature of the curriculum (compulsory) and the behaviours (controlling) of teachers (Lewis, 2014). This aligns with other research which has shown educational policies (including PE) and practices frequently foster learning through strategies including external control, artificial rewards, monitoring, and evaluation that often leads to pupil disengagement through learning being a chore, rather than an enjoyable experience (Deci & Ryan, 2012). Studies two and three showed that this practice in schools PE can lead to pupils developing low self-esteem and poor perceptions of body image (exacerbated by high levels of self-consciousness), which is also highlighted in the literature (Gray, MacIsaac, & Jess, 2015). To support the need to pay careful attention to the motivational climate in PE, Hagger et al., (2007) found that in Finland (where there are high levels of PE enjoyment [Soini, 2006]), higher levels of autonomy support are evident through the curriculum delivery compared to other European nations, including Britain.

Research has shown that teachers adopting a more traditional approach to learning in PE, will likely focus on the development of pupils' sport specific skills (Moy, Renshaw, & Davids, 2015) and improving physical health through increased levels of PA (Gray et al., 2015). Subsequently, PE of this nature is more focused on performance and as such facilitates those pupils already more able to perform and of good fitness. However, debilitating those pupils less able to perform these necessary sports specific skills (studies two and three). Previous research has shown that performance (or ego) oriented environments can have serious negative motivational consequences for pupils (Kavussanu & Roberts, 2001). This was found in studies two

and three where pupils experienced embarrassment and bullying due to social evaluation and subsequently disengaged from PE.

In contrast, motivational climate research has demonstrated the benefits of adopting a more task (rather than ego) orientated learning environment (Goudas & Biddle, 1994). For example, mastery or task-orientated climates have been shown to lead to more adaptive learning styles and subsequently, improved outcomes such as enjoyment and participation (Carpenter & Morgan, 1999; Sproule et al., 2007). Indeed, the participants in study three highlighted the need for PE to be more pupil friendly, with teacher delivery focussing more on positive learning experiences for all rather than on the performance outcomes. These results connect strongly to the types of task-oriented learning environments suggested by motivational climate research (Carpenter & Morgan, 1999; Sproule et al., 2007; Wang, Liu, Sun, Lim, & Chatzisarantis, 2010). There are clear features of task-oriented climates, which have been used to develop TARGET guidelines (Ames, 1992a; 1992b) to help practitioners improve their learning environments (see chapter six for further discussion, pp. 206-207). Importantly, research has also shown that it is possible for teachers to successfully change their motivational climate through their teaching approach (Gray, Sproule, & Morgan, 2009).

The controlling nature of a secondary school (highlighted earlier in this section, studies two and three; Lewis, 2014) suggests that teachers use extrinsic motivational approaches in PE which can have detrimental effects on a pupil's continued engagement (Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015). While it may be necessary for teachers to adopt a more controlling approach to promote effective learning environments, research has shown that for pupils to remain on task and fully engage in learning, they (pupils) need to have good self-regulation skills to understand what and why they are learning (Gray, Morgan, & Sproule, 2017; Kaplan, 2008).

Haerens et al. (2015) advocate that autonomy supportive teaching practices should be applied in PE, which they suggest can be achieved through teacher education and that teachers are made aware of the associated motivational risks from using controlling practices. In line with SDT, this would include the development of effective teaching styles (e.g., autonomy supporting) designed to nurture pupils' psychological needs for autonomy, competence, and relatedness (Occhino, Mallet, Rynne, & Carlisle, 2014). For example, teachers using a more autonomy supportive teaching approach attempt to identify develop and then nurture pupils' interests through strategies such as

using inviting language (Reeve, 2009), offering choices (Prusak, Treasure, Darst, & Pangrazi, 2004), and providing opportunities for pupils to use their initiative (Reeves & Jang, 2006). This style of autonomy supportive teaching was shown in study two. The participants (during S5 & S6) said their teachers explained the benefits of participation (good self-regulation and understanding) in a non-controlling way (inviting), offered choice, and provided them with opportunities to, for example, design their own fitness programmes (initiative). Research has also suggested that when teachers encourage learners to make decisions (e.g., through taking on responsibility for lessons), levels of intrinsic motivation are enhanced, which then leads to higher levels of perceived competence and enjoyment, and positive attitudes towards school PE (Morgan & Kingston, 2010). This was demonstrated in study two where participants said they 'enjoyed' school PE in S5 because they were offered more choice and given greater responsibility during lessons (e.g., choice of less structured activities and helping with teaching younger pupils), which appeared to promote their engagement in school PE.

Research advocates that autonomy supportive teaching approaches in school PE promote improved learning environments for pupils (Lewis, 2014; studies two and three). However, previous research has also shown that there are several barriers preventing teachers from adopting those preferred practices including 1) lack of support/guidelines from school programmes in promoting autonomy supporting strategies (Lepper & Cordova, 1992), 2) high demands on teachers (built on accountability, performance standards, deadlines, large class sizes and pupils' irresponsible behaviour leading to more teacher-directed classes (Boggiano, Barret, Weiher, McClelland, & Lusk, 1987; Skinner & Belmont, 1993), and 3) cultural, teacher, and parental beliefs supporting extrinsic motivational incentives (Boggiano et al., 1987). Therefore, while it is clear that careful consideration of the PE climate will help improve pupils' learning experiences, more work is required to help develop and support schools' and teachers' ability to achieve this, by maximising skills and minimising barriers. This is likely to be most effectively done through coherence between teacher education, continued professional development activities and teaching resources, policy strategies, and assessment, as well as the engagement of significant others in the school and wider community (e.g., Yli-Piipari, 2014). While, there has been an increased academic interest in Scottish PE there is still a gap in understanding professional issues in teaching at a national level (Craig et al., 2016). Although some of the findings from study three add an original contribution to this research gap, more

work is warranted. It is important to note that further understanding of the connection between the role of PE and PA participation is also required.

Limitations of the Thesis and Implications for Future Research

Due to the practical concerns associated with any study, the design is likely to be restricted and as such, predisposed to limitations. Therefore, to benefit future studies of a similar nature, any known limitations should be taken into consideration. The studies in this thesis (three studies) have several limitations, some of which are practical in nature, and some of which are related to the design of each study. As such, if any of the studies were to be replicated, the researcher may decide to conduct them differently due to their limitations. Some of the limitations were related to population sampling, measurement issues, additional design, and practical considerations. Although limitations are discussed for each of the studies separately (within each study limitations sections), they are summarised below. Also, more comprehensive discussion related to limitations in mixed methods and qualitative research are discussed throughout chapter four.

Limitation Associated with Population Sampling

There were a number of issues associated with sampling in this thesis. In study one, due to ethical issues there were restrictions related to sampling young people that led to complications in the recruitment. Subsequently, the total number of participants was lower than expected, which meant that some of the more advanced statistical analysis were not performed because of low cell numbers (e.g., the interactions between gender and SES on club activity sessions). Future research would benefit from larger numbers to support the power of statistical analysis and also allow the potential for better representative samples within specific populations.

A limitation related to population sampling for study two was that all of the participants who volunteered to take part, were already enrolled in the secondary school PE and recreational programme. As such, the participants were already interested and motivated in PA to some extent. This may have led to a bias towards young people who had more positive experiences of PA. Although, it is important to note that within this cohort there were many who reported negative experiences. Further, while it would be highly beneficial to understand the experiences of less motivated young people, the

recruitment of this type of volunteer to a study about PA experiences is challenging (Smith & Biddle, 2008). Also, study two interviewed only participants from lower SES backgrounds, and as such, no comparison between or across SES was examined (e.g., those from higher SES backgrounds). Furthermore, only participants from one school were interviewed, also due to the inherent limitations of the qualitative nature of the study, the results of this narrow sample cannot be generalised to other populations (e.g. urban locations and the whole of Scotland).

For study three, a limiting factor related to sampling was that the participants, (although all qualified PE teachers) were not, at the time of the interviews, practicing teachers within a school. Also, some of the participants had only limited or no experience in working with young people from low SES backgrounds or deprived schools. These limitations may have impacted on their opinions (e.g., as experts in youngsters PA). A further limitation to this study was that the sample only included expert qualified PE teachers. The sample could have been expanded to include, for example, non-PE teachers, activity schools' coordinators, sports coaches, and parents. By expanding the sample in this way, would have provided different opinions and views from significant others, which would have subsequently helped towards a better understanding of the nature of PA in young people within a Scottish context.

Limitation Associated with Measurement

In this thesis, there were also a number of issues associated with measurement. For example, study one used assessment instruments (i.e., self-report questionnaires) that had no evidence of validity or reliability. Also, study one only investigated young people's frequency of club activity sessions, therefore, lacked the scope to capture other complexities associated with PA in young people (e.g., unstructured activities, duration, and intensity of activity). Through reflection (see chapter three for more reflective discussion, p. 76), this limited the validity of these results and also the coherence of study one with studies two and three, which investigated PA more broadly. However, it is important to note that due to nature of the researcher's 'PhD journey' (e.g., initial personal motivation for study one and ongoing professional development), many changes have been made (since the original submission) to recognise these limitations and offer an interpretation that is more grounded in the data and evidence base in the PA literature.

On reflection (see reflection section, chapter three, p. 76), to capture more accurately the nature of PA in young people, study one would have been improved by using more appropriate self-report measures such as the Physical Activity Questionnaires for Children and Adolescence (PAQ-C and PAQ-A), the Youth Risk Behaviour Surveillance Survey (YRBS) or the Teen Health Survey (a shortened version of the YRBS). These questionnaires have been shown to demonstrate the best available reliability and validity in measuring PA in young people. However, the measurement of PA through self-report questionnaires is still limited. For example, while the reliability and validity of PAQ assessment measures has been evidenced (Bervoets et al., 2014; Biddle, Gorely, Pearson, & Bull, 2011), some research highlights differences in respondent responses, seasonal variations (Voss, Dean, Gardner, Duncombe, & Harris, 2017), lack of ethnic and cultural representation (Gobbi, Elliot, Varnier, & Carraro, 2016), and concerns with memory recall (Benitez-Porres et al., 2016). Also, some participants in study one (younger children from lower SES backgrounds) were found to have difficulty in understanding some of the items within the questionnaires, which teachers reported was due to reading and writing difficulties. To help with this issue, future research should employ different strategies such as participants being read the questions, rewording items, using pictures, and perhaps additional time to ensure that the children having difficulties are better provided for to complete the questionnaires.

As highlighted above, the accurate assessment of PA in young people is important to researchers, policy makers, and practitioners. As such, suitable approaches and instruments are necessary to measure levels of PA effectively (Dollman et al., 2009). As there is no single assessment available to quantify all PA, many researchers use multiple techniques such as simultaneous use of accelerometers, GPS, heart rate monitoring, and log books (Corder, Brage, Wareham, & Ekeland, 2005; Wheeler, Cooper, Page, & Jago, 2010).

Limitations Related to Additional Design and Practical Considerations

In line with the mixed methods design, this thesis used one quantitative and two qualitative research approaches to investigate the nature of PA in young people from within a Scottish context. However, due to the nature of the PhD journey (see chapter three for more explanation, p. 76), this thesis did not identify an overarching research aim at the beginning (Creswell, 2014). Subsequently, this limited the researcher from

choosing the most appropriate mixed methods design (Onwuegbuzie & Leech, 2005). In order to bring about a more structured, therefore, more appropriate approach to a mixed methods design, future research would benefit from ensuring that an overarching research question is identified at the beginning of a programme of work. Also, there is continuing debate over whether participants for the sample in one study (e.g. qualitative) should be the same in the other study (e.g., quantitative), and therefore questions the validity of the overall investigation (Creswell, 2014). Typically, researchers would argue that because mixed methods designs are used to compare data from one study with the data from another, then the more similar the databases are, the better the comparison (Bryman, 2006). However, achieving similar databases (e.g., same age groups) is not always possible particularly in research involving vulnerable populations such as in children under the age of 16 (Oates, Kwiatkowski, & Coultard, 2010). In the present thesis, study one involved children under the age of 16. However, to improve scientific value, therefore, the 'development of knowledge and understanding' (Oates, Kwiatkowski, & Coultard, 2010, p. 9), a multilevel sequential mixed methods design was used which involved collecting qualitative data after a quantitative study (Giacobbi, Poczwardowski, & Hager, 2005). Also, to help understand further the quantitative data (study one) in more depth (Creswell, 2014), adult participants (rather than children, therefore, different ages) were used in studies two and three because, for example, they were more able to articulate valuable information through their experiences, in 'the nature of young people's PA.'

Similar to other research, a further limitation of study one was that it was cross-sectional in design, therefore, further assessment of, for example, tenets of SDT in experimental and longitudinal studies is necessary. Further, study one did not investigate the inter-relationships between PA, motivation, and the three basic psychological needs. The satisfaction of the basic psychological needs (relatedness, autonomy and competence) predicts self-determined motivation (Ryan & Deci, 2000) thus more work looking at the influence of needs satisfaction is necessary to better understand 'the nature of PA in young people.' Also, this study did not examine the social factors influencing young people's basic needs or indeed many of the other factors (as identified by socio-ecological models).

Also, as study two was a retrospective investigation across the young people's development stages (children, adolescence, and early adulthood), the data collected will inevitably be subject to issues related to reliability and accurate memory recall (Razavi,

2001). Study three, being qualitative in nature, also has limitations with regards to memory recall. Study one, also relied on accurate recall of club participation, which has been shown to limit reliability of this type of research design. Further, due to the nature of the methodologies utilised in this thesis, it was not possible to glean information related to other important aspects of PA, for example, the duration, frequency, and intensity of PA. To improve the quality of investigations of this nature (PA in young people), future research would be better to use more longitudinal studies, with improved measures to track the nature of PA in young people across key development stages including childhood, adolescence and early adulthood (study two).

Conclusion

This thesis adopted a mixed methods approach incorporating quantitative and qualitative research methodologies to 'investigate the nature of PA in young people within a Scottish context.' The experiences of young people and the perceptions of PE professionals were investigated to further understand the complexities apparent in the nature of PA participation, with a particular focus on low SES status.

The findings of this thesis demonstrate that the nature of PA is complex and multi-faceted. SES was shown to play a key role in participation. Specifically, those young people from lower SES backgrounds participated in less structured sports type activities than those from higher SES backgrounds. However, those from lower SES were shown to take part in several types of unstructured activities categorised in the present thesis as AT-2 and AP-2. However, interpretation of this finding must be taken with caution due to methodological issues identified in study two. Gender was found to influence the type and pattern of unstructured and structured activities across the child and adolescent development stages.

SDT was shown to be a useful motivational theory to underpin research in this area. Throughout the thesis the role of intrinsic motivation, actual and perceived competence, relatedness, and autonomy were shown to be important for enjoyment and PA engagement. Parental, social, and cultural factors were also shown to be influential for early participation choices. PE was perceived to be an important domain through secondary school with previous experience and the nature and motivational climate of PE being crucial to young people's engagement.

This thesis also highlighted that there are serious challenges to delivering an effective PE experience to pupils with a wide range of ability and backgrounds. These were exacerbated by the vagueness of policy guidance (e.g., within Scotland's CfE), the pressures of certification, and the mostly sport dominated culture of PE. Implications for policy and practice in relation to the motivational climate of PE emerged. Finally, this thesis has provided an empirical foundation for further study.

References

A National Statistics Publication for Scotland, (2012). Scottish Index of Multiple Deprivation 2012. *The Scottish Government, Edinburgh.* Retrieved from http//www.simd.scotland.gov.uk/publication-2012/

Aarts, H., Paulussen, T., & Schaalma, H. (1997). Physical Exercise Habit: on the Conceptualization and Formation of Habitual Health Behaviours. *Health Education Research, 12, 363-374.* doi:10.1093/her/12.3.363

Abbott, A., Collins, D., Sowerby, K., & Martindale, R. (2007). Developing the Potential of Young People in Sport. *A Report for Sportscotland by the University of Scotland.* Retrieved from https://sportscotland.org.uk/documents/resources/developingthepotentialofyoungpeopleinsport.pdf

Active Healthy Kids Canada, (2008). Canada's Report Card on Physical Activity for Children and Youth, 2008. Retrieve from http://www.activehealthykids.ca/Ophea/ActiveHealthyKids_v2/programs_2008reportcard.cfm.

Adamo, K. B., Prince, S. A., Tricco, A. C., Connor-Gorber, S., & Tremblay, M. (2009). A Comparison of Indirect Versus Direct Measures for Assessing Physical Activity in the Pediatric Population: A Systematic Review. *International Journal of Pediatric Obesity*, 4(1), 2–27.

Age of Legal Capacity (Scotland) Act (1991). Retrieved from http//www.legislation.gov.uk/ukpga/1991/50/pdfs/ukpga_19910050_en.pdf.

Ainsworth, B. E., Haskell, W. L., Herrmann, S. D., et al. (2011). Compendium of Physical Activities: A Second Update of Codes and MET values. *Medicine & Science in Sports & Exercise, 43, 1575-1581.* doi:10.1249/MSS.0b013e31821ece12

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. doi: 10.1093/her/cy1063

Allison, K. R., Adlaf, E. M., Dwyer, J. J. M., Lysy, D. C., & Irving, H. M. (2007). The Decline in Physical Activity Among Adolescent Students. *Canadian Journal of Public Health, 98(2), 97-100.*

Ames, C. (1992a). Achievement Goals, Motivational Climate, and Motivational Processes. In: G. C. Roberts (Ed.), Motivation in Sport and Exercise (pp. 161-176. Champaign, IL: Human Kinetics.

Ames, C. (1992b). Classroom: Goals, Structures, and Student Motivation. *Journal of Educational Psychology*, 84, 261-271.

Andersen, E. S., Winett, R. A., & Wojcik, J. R. (2011). Social Cognitive Determinants of Nutrition and Physical Activity Among Web-Health Users Enrolling in an Online Intervention: The Influence of Social Support, Self-Efficacy, Outcome Expectations, and Self-Regulation. *Journal of Medical Internet Research,* 13(1), e28. doi:10.2196/jmir.1551

Anderson, L. W., Jacobs, J., Schramm, S., & Splittgerber, F. (2000). School Transitions: Beginning of the End or a New Beginning? *International Journal of*

Education, *33*, 325–339. doi:10.1016/ S0883-0355(00)00020-3

Andersen, L. B., Riddoch, C., Kriemler, S., & Hills, A. (2011). Physical Activity and Cardiovascular Risk Factors in Children. *British Journal of Sports Medicine,* 45, 871-876. doi:10.1136/bjsports-2011-090333

Anderssen, N., Wold. B., & Torssheim, T. (2005). Tracking of physical activity in adolescence. Research Quarterly for Exercise and Sport, 76(2), pp. 119-129.

Antaki, C., Billig, M., Edwards, D., & Potter, J. (2002). Discourse Analysis Means Doing Analysis: A Critique of Six Analytical Shortcomings. *DOAJ, Discourse Analysis Online,* 1(1). doi.10.5565/rev/athenead/v1n3.64

American Psychology Association (2017). Education and Socioeconomic Status. Retrieved from http://www.apa.org/pi/ses/resources/publications/factsheet-education.pdf

Astrup, A. (2001). Healthy lifestyles in Europe: Prevention of obesity and type II diabetes by diet and physical activity. *Public Health Nutrition,* 4(2b), 499–515. doi:10.1079/PHN2001136

Atkin, A. J., van Sluijs, E. M. F., Dollman, J., Taylor, W. C., & Stanley, R. M. (2016). Identifying Correlates and Determinants of Physical Activity in Youth: How Can We Advance the Field. *Preventative Medicine,* 87, 167-169. doi:10.1016/j.ypmed.2016.02.040

Balish, S. M., McLaren, C., Rainham, D., & Blanchard, C. (2014). Correlates of Youth Sport Attrition: A Review and Future Directions. *Psychology of Sport and Exercise,* 15, 429-439. doi:10.1016/j.psychsport.2014.04.003

Barnett, L. M., van Beurden, E., Morgan, P. J., Brooks, L. O., & Beard, J. R. (2009). Childhood Motor Skill Proficiency as a Predictor of Adolescent Physical Activity. *Journal of Adolescent Health,* 44, 252-259. doi:10.1016/j.jadohealth.2008.07.004

Barribal, K. L., & While, A. (1994). Collecting data using semi-structured interview: a discussion paper. *Journal of Advanced Nursing, 19(2), 328-335.*

Bassuk, S. S., & Manson, J. E. (2005). Epidemiological evidence for the role of physical activity in reducing risk of type 2 diabetes and cardiovascular disease. *Journal of Applied Physiology,* 99(3), 1193-1204. doi:10.1152/japplphysiol.00160.2005

Bassett, D. R., Fitzhugh, E. C., Health, G. W. et al., (2013). Estimated Energy Expenditure for School Based Policies and Active Living. *American Journal of Preventive Medicine,* 44(2), 108-113. doi:10.16/j.amepre.2012.10.017

Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J. F., & Martin, B. W. (2012). Correlates of Physical Activity: Why are Some People Physically Active and Others Not? *Lancet,* 380, 258-271. doi:10.1016/S0140-6736(12)60735-1

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(2suppl), 5-14.

Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin,*

117(3), 497-529.

Baxter-Jones, A. D. G., Faulkner, R. A., Forwood, M. R., Mirwald, R. L., & Bailey, D. A. (2011). Bone Mineral Accrual from 8 to 30 Years of Age: An Estimation of Peak Bone Mass. *Journal of Bone and Mineral Research,* 26(8), 1729-1739. doi:10.1002/jbmr.412

Behringer, M., Gruetzner, S., McCourt, M., & Mester, J. (2014). Effects of Weight-Bearing Activities on Bone Mineral Content and Density in Children and Adolescents: A Meta-Analysis. *Journal of Bone and Mineral Research*, 29(2), 467-478. doi:10.1002/jbmr.2036

Bench, S. (2007). Recognition and Management of Critical Illness by Midwives: Implications for Service Provision. *Journal of Nursing Management*, 15, 348–356.

Benitez-Porres, J., López-Fernandez, I., Raya, J. F., Alvarez Carnero, S., Álvaro-Cruz, J. R., & Alvarez Carnero, E. (2016). Reliability and Validity of the PAQ-C Questionnaire to Assess Physical Activity in Children. *Journal of School Health*, 86(9), 677-685. doi:10.1111/josh.12418

Benner, A. D., & Graham, S. (2009). The transition to high school as a developmental process among multiethnic urban youth. *Child Development, 80(2), 356-376.*

Bernard, H. R. (2002). Research Methods in Anthropology: Qualitative and Quantitative Approaches (3rd ed.). Walnut Creek, CA: Alta Mira Press.

Bervoets, L., Van Noten, C., Van Roosbroeck, S., Hansen, D., Van Hoorenbeeck, K., Verheyen, E., Van Hal, G., Vankerckhoven, V. (2014). Reliability and Validity of the Dutch Physical Activity Questionnaires for Children (PAQ-C) and Adolescents (PAQ-A). *Archives of Public Health,* 72(47), 1-7.

Bhalle, J. A., & Weiss, M. R. (2010). A Cross-Cultural Perspective of Parental Influence on Female Adolescents' Achievement Beliefs and Behaviours in Sport and School Domains. *Research Quarterly for Exercise in Sport*, 81(4), 494-505.

Biddle, S. H., Atkin, A. J., Cavill, N., & Foster, C. (2011). Correlates of Physical Activity in Youth: A Review of Quantitative Systematic Reviews. *International Review of Sport and Exercise Psychology,* 4(1), 25-49. doi:10.1080/1750984X.2010.548528

Biddle, S. J. H., Akande, D., Armstrong, N., Ashcroft, M., Brooke, R., & Goudas, M. (1996). The Self-Motivation Inventory Modified for Children: Evidence on Psychometric Properties and its Use in Physical Exercise. *Journal of Sport Psychology*, 27(3), 237-250.

Biddle, S. J. H., Asare, M. (2011). Physical Activity and Mental Health in Children and Adolescents: A Review of Reviews. *British Journal of Sports Medicine*, 45, 886–895.

Biddle, S. J. H., Soos, I., & Chatzisarantis, N. (1999). Predicting Physical Activity Intentions Using Goal Perspectives and Self-Determination Theory Approaches. *European Psychologist,* 4(2), 83-89.

Biddle, S. J. H., Gorley, T., & Stensil, D. J. (2004). Health-enhancing physical activity and sedentary behaviour in children and adolescents. *Journal of Sports Sciences, 22, 679-701.* doi:10.1080/02640410410001712412

Biddle, S. J. H., Coalter, F., O'Donovan, T., Nevill, M., & Whitehead, S. (2005).

Increasing demand for sport and physical activity by girls (Research Report No. 100). Retrieved from Sportscotland http://www.vagaassociates.com/eqss/docs/sportscotland/Increasing%20Demand%20for%20Sport%20and%20Physical%20Activity%20by%20Girls%5B1%5D.pdf

Biddle, S. J. H., Gorely, T., Pearson, N., & Bull. (2011). An Assessment of Self-Reported Physical Activity Instruments in Young People for Population Surveillance: Project ALPHA. *International Journal of Behavioural Nutrition and Physical Activity*, 8(1), 1-9.

Biddle, S. J. H., & Mutrie, N. (2008). *Psychology of physical activity: determinants, well-being and interventions (2nd ed.).* Routledge Taylor & Francis Group.

Biddle, S. J. H., Mutrie, N., & Gorley, T. (2015). *Psychology of Physical Activity: Determinants, Well-Being and Interventions (3rd ed.).* Routledge Taylor & Francis Group.

Biddle, J. H., Whitehead, S. H., O'Donovan, T. M., & Nevil (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. doi:10.1123/jpah.2.4.423

Birchwood, D., Roberts, K., & Pollock, G. (2008). Explaining Differences in Sport Participation Rates Among Young Adults: Evidence from the South Caucasus. *European Physical Education Review, 14, 283-298.* doi:10.1177/1356336X08095667

Biro, F. M., & Wein, M. (2010). Childhood Obesity and Adult Morbidities. *The American Journal in Clinical Nutrition,* 91, 1499S-1505S. doi:10.3945/ajcn.2010.28701B

Bingham, D. D., Costa, S., Hinkley, T., Shire, K. A., Clemes, S. A., & Barber, S. E. (2014). Physical Activity During the Early Years. A Systematic Review of Correlates and Determinants. *American Journal of Preventive Medicine*, 51(3), 384-402. doi: 10.1016/j.amepre.2016.04.002

Boggiano, A. K., Barrett, M., Weiher, A. W., Mcclelland, G.H., Lusk, C. M., & Sherman, S. J. (1987). Use of the Maximal-Operant Principle to Motivate Children's Intrinsic Interest. *Journal of Personality and Social Psychology*, 53(5), 866-879.

Boon, R. M., Hamlin, M. J., Steel, G. D., & Ross, J. J. (2008). Validation of the New Zealand Physical Activity Questionnaire (NZPAQ-LF) and the International Physical Activity Questionnaire (IPAQ-LF) with Accelerometry. *British Journal of Sports Medicine*, 44, 741–746.

Borde, R., Smith, J. J., Sutherland, R. Nathan, N., & Lubans, D. R. (2017). Methodological Considerations and Impact of School-Based Interventions on Objectively Measured Physical Activity in Adolescence: A Systematic Review and Meta-Analysis. *Pediatric Obesity/Research Methods*, 18, 476-490. doi: 10.1111/obr.12517.

Boreman, C., & Riddoch, C. (2001). The Physical Activity, Fitness and Health of Children. *Journal of Sports Sciences, 19, 915-929.* doi:10.1080/026404101317108426

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology,* 3, 77-101. doi:10.1191/1478088706qp063oa

British Heart Foundation Health Promotion Research Group Department of Public Health, University of Oxford (2012). *Physical Activity Statistics 2012*. Retrieved from http://www.publichealth.ox.ac.uk/bhfhprg

British Heart Foundation Health Promotion Research Group Department of Public Health, University of Oxford (2015). *Physical Activity Statistics 2015*. Retrieved from http://www.publichealth.ox.ac.uk/bhfhprg

British Medical Association (2010). Scotland Briefing Priorities for Health: Tackling childhood obesity. In the Scottish Government (2010). *Scottish Health Survey. Edinburgh*. Retrieved from http://www.scotland.gov.uk/Publications/2010/09/23160159/0

Bronfenbrenner, U. (1979). The Ecology of Human Development: Experiments by Nature and Design. Harvard University Press, Cambridge, Massachusetts.

Bronfenbrenner, U. (1994). Ecological Models of Human Development. In *International Encyclopaedia of Education,* 3(2nd Ed), Oxford, Elsevier. Reprinted in: Gauvain, M. & Cole, M. (Eds.), *Readings on Development of Children, 2nd Ed.* (1993, pp. 37-43). NY: Freeman.

Brockman, R., Fox, K. R., & Jago, R. (2011). What is the Meaning and Nature of Active Play for Today's Children in the UK? *International Journal of Behavioural Nutrition and Physical Activity, 8, 1-7.* doi:10.1186/1479-5868-8-15

Bromley, C., Dowling, S., Gray, L., Hinchliffe, S., Hughes, T., Leyland, A., Mabelis, J., & Wardle, H. (2013). The Scottish Health Survey 2012. The Scottish Government (SHeS, volume 1, main report. ISBN: 9781782569244). Retrieved from http://www.gov.scot/Publications/2013/09/3684

Brooke, H. L., Corder, K., Griffin, S. J., & van Sluijs, E. M. F. (2014). Physical Activity Maintenance in the Transition to Adolescence: A Longitudinal Study of the Roles of Sport and Lifestyle Activities in British youth. *Public Library of Science ONE, 9, 1-8.* doi:10.1371/journal.pone.0089028

Brown, T., Kelly, S., & Summerbell, C. (2006). Prevention of Obesity: A Review of Interventions. *Obesity Reviews,* 8(Supp. 1), 127-130.

Bryman, A. (2006). Integrating Quantitative and Qualitative Research: How is it Done? *Qualitative Research*, *6*(1), 97-113.

Burge, R., Dawson-Hughes, B., Solomon, D. H., Wong, J. B., King, A., & Tosteson, A. (2007). Incidence and Economic Burden of Osteoporosis-Related Fractures in the United States, 2005-2025. *Journal of Bone and Mineral Research,* 22(3), 465-475. doi:10.1359/JBMR.061113

Cale, L. (1996). An Assessment of the Physical Activity Levels of Adolescent Girls-Implications for Physical Education. *European Journal of Physical Education, 1, 55.* doi:10.1080/1740898960010105

Canadian Fitness Lifestyle Research Institute. (2007). *CANPLAY study: Participation in organized physical activity or sport and steps taken.* Retrieved from http://www.cflri.ca/eng/programs/canplay/documents/pam05_sec5.pdf

Carpenter, P. J., & Morgan, K. (1999). Motivational Climate, Personal Goal Perspectives, and Cognitive and Affective Responses in Physical Education Classes. *European Journal of Physical Education, 4(1), 31-44.* doi:10.1080/1740898990040103

Carse, N. (2015). Primary Teachers a Physical Education Curriculum Change Agents. *European Physical Education Review,* 21(3), 309-324. doi:10.1177/1356336X14567691

Carroll, B., & Loumidis, J. (2001). Children's Perceived Competence and Enjoyment in Physical Education and Physical Activity Outside School. *European Physical Education Review, 7,* 24–43. doi:10.1177/1356336X010071005

Carver, A., Timperio, A., & Crawford, D. (2008). Playing it safe: The Influence of Neighbourhood Safety on Children's Physical Activity – A Review. *Health & Place, 14, 217-227.* doi:10.1016/j.healthplace.2007.06.004

Cavill, N., Biddle, S., & Sallis, J. F. (2001). Health Enhancing Physical Activity for Young People: Statement of the United Kingdom Expert Consensus Conference. *Pediatric Exercise Science, 13, 12-25.*

Casey, M. M., Telford, A., Mooney, A., Harvey, J. T., Eime, R. M., & Payne, W. R. (2014). Linking Secondary School Physical Education with Community Sport and Recreational for Girls: A Process Evaluation. *Biological Medical Central for Public Health,* 14(1039), 1-14. doi:10.1186/1471-2458-14-1039

Centers for Disease Control and Prevention, (2009). Guidelines for school and community programs to promote lifelong physical activity among young people. *Morbidity and Mortality Weekly Report,* 46(RR-6), 1-6.

Cesa, C. C., Sbruzzi, G., Ribeiro, R. A., et al. (2014). Physical Activity and Cardiovascular Risk Factors in Children: Meta-Analysis of Randomised Clinical Trials. *Preventative Medicine,* 69, 54-62. doi:10.1016/j.ypmed.2014.08.014

Charmaz, K. (2006). *Constructing Grounded Theory – A Practical Guide Through Qualitative Analysis*. Thousand Oaks: Saga Publications.

Cherryholmes, C. H. (1992). Notes on Pragmatism and Scientific Realism. *Educational Researcher,* 21(6), 13-17.

Clark, W. (2008). Kids' Sports. (parental involvement in children's sport participation) (Survey). *Canadian Social Trends,* 85, 54-61.

Coakley, J. & White, A. (1992). Making decisions: Gender and Sports Participation Among British Adolescents. *Sociology of Sport Journal,* 9, 20-25.

Cohen, J. (1988) Statistical Power Analysis for the Behavioral (2nd ed.). Hillsdale, NJ: Erlbaum.

Collins, D., Martindale, R., Button, A., & Sowerby, K. (2010). Building a physically active and talent rich culture: An educationally sound approach. *European Physical Education Review, 16,* 7–28. doi:10.1177/1356336X10369196

Cooper, A. R., Jago, R., Southward, E. F., & Page, A. S. (2012). Active Travel and Physical Activity Across the School Transition: The PEACH Project. *Medicine & Science in Sports & Exercise,* 44(10) 1890-1897. doi: 10.1249?MSS.0b013e31825a3ale

Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research (3rd ed.).* Thousand Oaks: Saga Publications.

Corbin, C. B., & Pangrazi, R. P. (2003). Guidelines for Appropriate Physical Activity for Elementary School Children: *2003 update*. Reston, VA: NASPE Publications.

Corbett, J., Dobbie, F., Doig, M., et al. (2012). The Scottish Health Survey 2012. The Scottish Government (SHeS, volume 1, main report. ISBN: 978-0-7559-96-6). Retrieved from http//www.gov.scot/resource/doc/325/403/0104975.pdf

Corder, K., Brage, S., Wareham, N. J., & Ekelund, U. (2005). Comparison of PAEE from Combined and Separate Heart Rate and Movement Models in Children. *Medicine Science, Sports and Exercise,* **37**(10), 1761–7. doi:10.1249/01.mss.0000176466.78408.cc

Corder, K., Ekelund, U., Steele, R. M., Wareham, N. J., & Brage, S. (2008). Assessment of physical activity in youth. *Journal of Applied Physiology*, 105(3), 977–987. doi: 10.1152/japplphysiol.00094.2008

Corder, K., van Sluijs, E. M. F., Ekeland, Ulf., Jones, A. P., & Griffin, S. J. (2010). Changes in Children's Physical Activity Over 12 Months: Longitudinal Results from SPEEDY Study. *American Academy of Paediatrics, 126, e926-e935.* doi:10.1542/peds.2010-0048

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences (2nd ed.).* Hillsdale, NJ: Erlbaum.

Cote, J., Salmela, J. H., & Baria, A. (1993). Organizing and interpreting unstructured qualitative data. *The Sport Psychologist, 7, 127-137.*

Cox, A. E., Ullrich-French, S., & Sabiston, C. M. (2013). Using Motivation Regulations in a Person-Centered Approach to Examine the Link Between Social Physique Anxiety in Physical Education and Physical Activity-Related Outcomes in Adolescents. Psychology of Sport and Exercise, 14(4), 461-467. doi:10.1016/j.psychsport.2013.01.005

Currie, C. E., Leven, K., Kirby, J., Currie, D., van der Sluijs, W., & Inchley, J. (2007). Health Behaviour in School-Aged Children (HBSC) 2006 Survey in Scotland National Report. University of Edinburgh: Child and Adolescent Health Research Unit (CAHRU), 6, 31-37.

Currie, C. E., Leven, K., Kirby, J., Currie, D., van der Sluijs, W., & Inchley, J. (2011). Health Behaviour in School-Aged Children (HBSC) 2010 Survey in Scotland National Report. University of Edinburgh: Child and Adolescent Health Research Unit (CAHRU).

Currie, C. E., van der Sluijs, W., Whitehead, R. D., Currie, D. B., Rhodes, G. Neville, F. G., & Inchley, J. (2015). Health Behaviour in School-Aged Children (HBSC) 2014 Survey in Scotland National Report. University of St Andrews: Child and Adolescent Health Research Unit (CAHRU), 7, 41-48.

Craft, L., Pfeiffer, K., & Pivarnik, J. (2003). Predictors of Physical Competence in Adolescent Girls. *Journal of Youth and Adolescence*, 32(6), 431-438. doi:10.1023/A:1025986318306

Craggs, C., Corder, K., van Sluijs, E. M. F., & Griffin, S. J. (2011). Determinants of Change in Physical Activity in Children and Adolescents. A Systematic Review. *American Journal of Preventative Medicine*, 40(6), 645-658. doi:10.1016/j.amepre.2011.02.025

Craig, M., Thorburn, M., Mulholland, Horrell, A., & Jess, M. (2016). Understanding Professional Issues in Physical Education - A Scottish Insight. *Scottish Education Review,* 48(2), 80-100.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* 4th ed. Thousand Oaks, California: SAGE Publications.

Creswell, J. W., Plano, Clark, V. L., (2011). Designing and Conducting Mixed Methods Research (2nd ed.). Thousand Oaks, CA: Saga.

Crocker, P., Kowalski, N., Kowalski, K., Chad, K., Humbert, L., & Forrester, S. (2001). Smoking Behaviour and Dietary Restraint in Young Adolescent Women: The Role of Physical Self-Perceptions. *Canadian Journal of Public Health / Revue Canadienne de Sante'e Publique,* 92(6), 428-432.

Crocker, P. R. E., Sabiston, C. M., Kowalski, K. C., McDonough, M. H., & Kowalski, N. (2006). Longitudinal Assessment of the Relationship Between Physical Self-Concept and Health-Related Behaviors and Emotion in Adolescent Girls. *Journal of Applied Sport Psychology, 18, 185-200.* doi:10.1080/10413200600830257

Crombie, P. A., Brunet, J., & Sabiston, C. M. (2011). Stop Staring! Proposed Strategies to Reduce Body Image Concerns in Physical Education. *Journal of Physical Education, Recreation and Dance,* 82, 39-43.

Cronbach, L. J., Gleser, G. C., Nanda, H., & Rajaratnam, N. (1972). *The Dependability of Behavioral Measurements*. New York: Wiley.

Csikszentmihalyi, M., & Rathunde, K. (1993). The Measurement of Flow in Everyday Life: Toward a Theory of Emergent Motivation. In J. E. Jacobs (Ed.). Development perspectives on motivation (pp. 57-97). Lincoln: University of Nebraska Press.

Davison, K. K., & Lawson, C. T. (2006). Do Attributes in the Physical Environment Influence Children's Physical Activity? A Review of the Literature. International *Journal of Behavioural Nutrition and Physical Activity*, 3(1), 19. doi:10.1186/1479-5868-3-19

Davison, K. K., Schmalz, D. L., & Downs, D. S. (2010). Hop, Skip…No! Explaining Adolescent Girls' Disinclination for Physical Activity. *Annuls of Behavioral Medicine,* 39(3), 290-302. doi: 10.1007/s12160-010-9180.x

Deci, E. L. (1975). Intrinsic Motivation. New York: Plenum press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior:* New York: Plenum Press.

Deci, E., & Ryan, R. M. (1995). Human Autonomy: The Basis for True Self-esteem. In M. Kernis (Ed.), Efficacy, agency, and Self-Esteem (pp. 31-49). New York, NY: Plenum Press.

Deci, E. L., & Ryan, R. M. (2000b). The "what" and "why" of goal pursuits: Human needs and the self-determination of behaviors. *Psychological Inquiry, 11, 227-268.* doi:10.1207/S15327965PLI1104_01

Deci, E. L., & Ryan, R. M. (2002). Overview of Self Determination Theory: An Organismic Dialectical Perspective. In E.L. Deci & R.M. Ryan (Eds.), Handbook of Self-Determination Research (pp. 9-10). The University of Rochester Press.

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and Education: The self-determination perspective. *Educational Psychologist, 26,* 325–346. doi:10.1207/s15326985/2603/264_6

Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again. *Review of Educational Research, 71,* 1–27. doi:10.3102/00346543071001001

DeCremer, D., & Leonardelli, G. J., (2003). Cooperation in Social Dilemmas and the Need to Belong: The Moderating Effect of Group Size. *Group Dynamics; Theory, Research, and Practice.* 7(2), 168-174. doi:10.1037/1089-2699.7.2.168

deOnis, M., Blossner, M., & Borghi, E. (2010). Global Prevalence and Trends of Overweight and Obesity Among Preschool Children. *American Society for Nutrition,* 92(5), 1257-1264. doi:10.3945/ajcn.2010.29786

D'Haese, S., Van Dyck, D., De Bourdeaudhuij, I., Deforche, B., & Cardon, G. (2015). The Association Between the Parental Perception of the Physical Neighbourhood Environment and Children's Location-Specific Physical Activity. *International Journal of Behavioral Nutrition and Physical Activity, 12, 1-9.* doi:10.1186/s12966-015-0 171-y

Department of Health. (2004). At least five a week; Evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer. London: Department of Health 2004. Retrieved from http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4080994

Department of Health, Physical Activity, Health Improvement and Protection. (2011). Start Active, Stay Active: A Report on Physical Activity from the Four Home Countries (11 July 2011). Retrieved from https://www.sportengland. org/media/388152/dh_128210.pdf

DePoy, E, & Gitlin, L. N. (1998). Introduction to Research: Understanding and Applying Multiple Strategies. St Louis: Mosby.

Dismore, H., & Bailey, R. (2010). 'Its Been a Bit of a Rocky Start': Attitudes Towards Physical Education Following Transition. *Physical Education and Sport Pedagogy, 15, 175-191.* doi:10.1080/17408980902813935

Doak, C. M., Visscher, T. L. S., Renders, C. M., & Seidell, J. C. (2006). The Prevention of Overweight and Obesity in Children and Adolescents: A Review of Interventions and Programmes. *Obesity Reviews,* 7, 111-136.

Dollman, J., Okely, A. D., Hardy, L., Timperio, A., Salmon, J., & Hills, A. (2009). A Hitchhiker's Guide to Assessing Young People's Physical Activity: Deciding what Method to Use. *Journal of Science and Medicine in Sport,* 12, 518-525. doi:10.1016/j.jsams.2008.09.007

Drenowatz, C., Eisenmann, J. C., Pfeiffer, K. A., Welk, G., Heelan, K., Gentile, D., & Walsh, D. (2010). Influence of Socio-Economic Status on Habitual Physical Activity and Sedentary Behaviour in 8- to 11-Year Old Children. *Biomedical Central,* 10(214), 1-11. doi:10.1186/1471-2458-10-214

Duncan, S. C., Duncan, T. E., Strycker, L. A., & Chaumeton, N. R. (2004). A Multilevel Approach to Youth Physical Activity Research. *Exercise and Sport Sciences Reviews,* 32(3), 95-9.

Dyson, A., Gallanaugh, F., & Millward, A. (2003). Making Space in the Standards Agenda: Developing Inclusive Practices in Schools. *European Educational Research Journal,* 2(2), 228-244.

Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). Motivation to Succeed. In W. Damon & N. Eisenberg (Eds.), *Handbook of Child Psychology* (pp. 1017-1095). New York: Wiley.

Edwardson, L., & Gorely, T. (2010). Parental Influences on Different Types and Intensities of Physical Activity in Youth: A Systematic Review. *Psychology of Sport and Exercise,* 11, 522-535. doi:10.1016/j.psychsport.2010.05.001

Education Scotland (2016). Quality and Improvement in Scottish Education, 2012 - 2016 (Report). Retrieved from http://www.education.gov.scot.

Ekelund, U., Luan, J., Sherar, L. B., Esliger, D. W., Griew, P., Cooper, A. (2012). Moderate to Vigorous Physical Activity and Sedentary Time and Cardiometabolic Risk Factors in Children and Adolescents. *Journal American Medical Association*, 307, 704–712. doi:10.1001/jama.2012.156

Emons, H. J. G., Groenenboom, K. R., Westerterp, K. R., & Saris, W. H. M. (1992). Comparison of Heart Rate Monitoring Combined With Indirect Calorimetry and the Doubly Labelled Water ($^2H_2{}^{18}O$) Method for the Measurement of Energy Expenditure in Children. *European Journal of Applied Physiology*, 65(2), 99-103. doi:10.1007/BF00705064

Evangelou, M., Taggart, B., Sylva, K., Melhuish, E., Sammons, P., & Siraj-Blatchford, I. (2008). *What Makes a Successful Transition from Primary to Secondary School?* Department for Children, Schools & Families Research (Report No. DCSF-RR019). Retrieved from University of London website: http://www.webarchive.nationalarchives.gov.uk/20130401151715//http://www.education.gov.uk/publications/eOrderingDownload/DCSF-RR019.pdf

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing Naturalistic Inquiry*: A Guide to Methods. Newbury Park, CA: Sage Publications.

Eyre, E. L. J., Duncan, M. J., Birch, S. L., Cox, V., & Blackett, M. (2015). Physical Activity Patterns of Ethnic Children from Low Socio-Economic Environments Within the UK. *Journal of Sports Sciences*, 33(3), 232-242. doi:10.1080/02640414.2014.934706

Fairclough, S., & Stratton, G. (2005). Physical Activity levels in Middle and High School Physical Education: A Review. *Pediatric Exercise Science,* 17, 217-236.

Farooq, M. A., Parkinson, K. N., Adamson, A. J., Pearce, M. S., Reilly, J. K., Hughes, A. R., Janssen, X., Basterfield, L., & Reilly, J. J. (2017). Timing of the Decline in Physical Activity in Childhood and Adolescence: Gateshead Millennium Cohort Study. *British Journal of Sports Medicine,* 0, 1-6. doi:10.1136/bjsports-2016-096933

Farsani, S., van der Aa, M. P., van der Vorst, M. M. J., Knibbe, C. A. J., and du Boer, A. (2013). Global Trends in the Incidence and Prevalence of Type 2 Diabetes in Children and Adolescence: A Systematic Review and Evaluation of Methodological Approaches. *Diabetologia,* 56, 1471-1488. doi:10.1007/s00125-013.2915-z

Faulkner, G. E. J., Buliung, R. N., Flora, P. K., & Fusco, C. (2009). Active School Transport, Physical Activity Levels and Body Weight of Children and Youth: A Systematic Review. *Preventive Medicine*, 48(1), 3-8. doi: 10.1016/j.ypmed.2008.10.017

Feda, D. M., Lambiase, M. J., McCarthy, T. F., Barkley, J. E., & Roemmich, J. N. (2012). Effects of Increasing Choice of Active Options on Children's Physically Active Play. *Journal of Science and Medicine*, 15, 334-340. doi:10.1016/j.jsams.2011.12.004

Fedewa, A. L., & Ahn, S. (2011). The Effects of Physical Activity and Physical Fitness on Children's Achievement and Cognitive Outcomes: A Meta-Analysis. *Research Quarterly for Exercise and Sport*, 82(3), 521-535.

Ferreira, I., van der Horst, K., Wendal-Vos, W., Kremers, S., van Lenthe, F. J., & Brug, J. (2006). Environmental Correlates of Physical Activity in Youth - A Review and Update. *Obesity Reviews*, 8, 129-154. doi:10.1111/j.1467-789X.2006.00264.x

Freedson, P. S. (1991). Electronic Motion Sensors and Heart Rate as Measures of Physical Activity in Children. *Journal of School Health*, 61(5), 220–223.

Fredricks, J. A., & Eccles, J. S. (2005). Family Socialization, Gender, and Sport Motivation and Involvement. *Journal of Sport & Exercise Psychology, 27, 3-31.*

Fredericks, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relations with participation and mental health. *Journal of Sport Behaviors*, 16, 124-146.

Field, A. (2013). Discovering Statistics Using IBM SPSS Statistics (4th ed.). SAGE Publications Ltd.

García Bengoechea, E., Sabiston, C. M., Ahmed, R., & Farnoush, M. (2010). Exploring the Links to Unorganized and Organized Physical Activity During Adolescence: The Role of Gender, Socio-Economic Status, Weight Status, and Enjoyment of Physical Education. *Research Quarterly for Exercise and Sport*, 81(1), 7-16.

Gairns, F., Whipp, P. R., & Jackson, B. (2015). Relational Perceptions in High School Physical Education: Teacher - and Peer - Related Predictors of Female Students' Motivation, Behavioural Engagement, and Social Anxiety. *Frontiers in Psychology, 6, 1-13.* doi:10.3389/fpsyg.2015.00850

Gebremariam, M. K., Bergh, I. H., Andersen, L. F., Ommundsen, Y. Bjelland, M., & Lien, N. (2012). Stability and Change in Potential Correlates of Physical Activity and Association with Pubertal Status Among Norwegian Children in the transition Between Childhood and Adolescence. *International Journal of Behavioral Nutrition and Physical Activity*, 9(56), 1-8.

Giacobbi, P. R., Poczwardowski, A., & Hager, P. (2005). A Pragmatic Research Philosophy for Sport and Exercise Psychology. *The Sport Psychologist*, 19, 18-31.

Gibbs, G. (1988). Learning by Doing: *A guide to teaching and learning methods.* Further Education Unit. Oxford Polytechnic: Oxford. Retrieved from https://thoughtsmostlyaboutlearning.files.wordpress.com/2015/12/learning-by-doing-graham-gibbs.pdf

Gillet, N., Vallerand, R. J., Amoura, S., & Baldes, B. (2010). Influence of Coaches' Autonomy Support on Athletes' Motivation and Sport Performance: A Test of the Hierarchical Model of Intrinsic and Extrinsic Motivation. *Psychology of Sport and Exercise,* 11, 155-161. doi: 10.1016/j.psychsport.2009.10.004

Gillison, F., Standage, M., & Skevington, S. (2006). Relationships Among Adolescents' Weight Perceptions, Exercise Goals, Exercise Motivation, Quality of Life and Leisure-Time Exercise Behaviour: A Self-Determination Theory Approach. *Health Education Research,* 21, 836–847.

Glass, T. A., & McAtee, M. J. (2006). Behavioral Science at the Crossroads in Public Health: Extending Horizons, Envisioning the Future. *Social Science and Medicine,* 62, 1650-1671. doi:10.1016/j.socscimed.2005.08.044

Gobbi, E., Elliot, C., Varnier, M., & Carraro, A. (2016). Psychometric Properties of the Physical Activity Questionnaire for Older Children in Italy: Testing the Validity Among a General and Clinical Pediatric Population. *PLoS ONE*, 11(5), 1-12. doi:10.1371/jpurnal.pone.0156354

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research (Report). *The Qualitative Report, 8*(4), 597-606.

Goudas, M., & Biddle, S. J. H. (1994). Perceived Locus of Causality, Goal Orientations, and Perceived Competence in School Physical Education Classes. *British Journal of Educational Psychology,* 64(Pt 3), 453-463.

Gravel, R., & Béland, Y. (2005). The Canadian Community Health Survey: mental health and well-being. *Canadian Journal of Psychiatry*. Revue Canadienne De Psychiatrie, 50(10), 573-9.

Gray, S., Sproule, J., & Morgan, K. (2009). Teaching Team Invasion Games and Motivational Climate. *European Physical Education Review*, 15(1), 65-89. doi:10.1177/1356336X09105212

Gray, S., MacIsaac, S., & Jess, M. (2015). Teaching 'Health' in Physical Education in a 'Healthy' Way. *Retos,* 28, 165-172.

Green, S. B. (1991). How Many Subjects Does It Take TO DO A Regression Analysis? *Multivariate Behavioral Research,* 26(3), 499-510. doi:10.1207/s153227906mbr2606 7

Green, C. B., & Chalip, L. (1998). Antecedents and Consequences of Parental Purchase Decision Involvement in Youth Sport. *Leisure Sciences*, 20, 95-109.

Guèvremont, A., Findlay, L., & Kohen, D. (2008). Organized Extracurricular Activities of Canadian Children and Youth. Statistics Canada, Catalogue no. 82-003-XPE. *Health Reports, 19*(3).

Gustafson, S. L., & Rhodes, R. E. (2006). Parental Correlates of Physical Activity in Children and Early Adolescents. *Sports Medicine,* 36(1), 79-97.

Haase, J. E., & Myers, S. T. (1988). Reconciling Paradigm Assumptions of Qualitative and Quantitative Research. *Western Journal of Nursing Research,* 10(2), 128-137.

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do Perceived Autonomy-Supportive and Controlling Teaching Relate to Physical Education Students' Motivational Experiences Through Unique Pathways? Distinguishing Between the Bright and Dark Side of Motivation.

Psychology of Sport and Exercise, 16 (Part 3), 26-36.

Hagger, M. S., Chatzisarantis, N. L. D., (2007). Intrinsic Motivation and Self-Determination in Exercise and Sport. Human Kinetics.

Hall, B., & Howard, K. (2008). A Synergistic Approach: Conducting Mixed Methods Research with Typological and Systemic Design Considerations. *Journal of Mixed Methods Research*, 2, 248 - 269. doi:10.117/1558689808314622

Hammersley, M., & Atkinson, P. (1983). Ethnography: Principles in Practice. London: Tavistock.

Hanewald, R. (2013). Transition Between primary and Secondary School: Why it is Important and How it can be Supported. *Australian Journal of Teacher Education, 38(1), 63-74.* doi:10.14221/ajte.2013v38n1.7

Harris, R. J. (1985). *A Primer of Multivariate Statistics (2nd ed.).* New York: Academic Press.

Hart, E., Leary, M. R., & Rejeski, J. W. (1989). The Measurement of Social Physique Anxiety. *Journal of Sport & Exercise Psychology, 11, 94-104.*

Harter, S. (1978). Effectance Motivation Reconsidered: Toward a Development Model. *Human Development*, 1, 34-64.

Healy, M., & Perry, C. (2000). Comprehensive Criteria to Judge Validity and Reliability of Qualitative Research within the Realism Paradigm. *Qualitative Market Research: An International Journal*, 3(3), 118-126. doi:10.1108/13522750010333861

Hills, A. P., Mokhtar, N., & Byrne, N. M. (2014). Assessment of Physical Activity and Energy Expenditure: An Overview of Objective Measures. *Frontiers in Nutrition*, 1(5), 1-16. doi:10.3389/fnut.2014.00005

Hill, J. (2004). Physical Activity and Obesity. *The Lancet*, 363, 182.

Hill, F., Le Grange, L., & Newmark, R. (2003). The Use of Qualitative and Quantitative Methodologies in a Special Educational Needs Study. *International Journal of Special Education, 18(2), 62-72.*

Hillman, M. (2006). Children's Rights and Adults' Wrongs. *Children's Geographies*, 4(1), 61-67. doi:10.1080/14733280600577418

Hillman, M., Adams, J., & Whitelegg, J. (1990). One false move…a study of children's independent mobility. *Policy study Institute.* Retrieved from http//www.psi.
org.uk/pdf/2009/OneFalseMove_Hillman.pdf

Hinkley, T., Crawford, D., Salmon, J., Okely, A. D., & Hesketh, K. (2008). Preschool Children and Physical Activity. A Review of Correlates. *American Journal of Preventive Medicine*, 34(5), 4350441. doi:10.1016/j.amepre.2008.02.001

Hjorth, M. F., Chaput, J.-P., Michaelsen, K., Astrup, A., Tetens, I., & Sjo¨din, A. (2013). Seasonal Variation in Objectively Measured Physical Activity, Sedentary Time, Cardio- Respiratory Fitness and Sleep Duration Among 8–11 Year-Old Danish Children: A Repeated-Measures Study. BMC Public Health, 13(1), 1.

Hodges-Kulinna, P., Martin, J., Lai, Q., Kliber, A. & Reed, B. (2003) 'Student Physical Activity Patterns: Grade, Gender and Activity Influences.' *Journal of Teaching in Physical Education*, 22(2), 298–310.

Holloway, I. (2005). Qualitative Research in Health Care. Maidenhead, England, New York: Open University Press.

Howe, K., & Eisenhart, M., (1990). Standards for Qualitative (and Quantitative) Research: A Prolegomenon. *Educational Research*, 19(4), 2-9.

Hopkins, R. B., Burke, N., Von Keyserlingk, C., Leslie, W. D., Morin, S. N., Adachi, J. D., Papaioannou, A., Bessette, L., Brown, J. P., Pericleous. L., & Tarride, J. (2016). The Current Economic Burden of Illness of Osteoporosis in Canada. *International Osteoporosis Foundation and National Osteoporosis Foundation*, 27, 3023-3032. doi:10.1007/s00198-016-3631-6

Hutchison, S., & Wilson, H. S. (1992). Validity Threats in Scheduled Semistructured Research Interviews. *Nursing Research*, 41(2), 117-119.

Hughes, A. R., Sherriff, A., Lawlor, D. A., Ness, A. R., & Reilly, J. J. (2011). Incidence of Obesity During Childhood and Adolescence in a large Contemporary Cohort. *Preventative Medicine,* 52, 300-304. doi:10.1016/j.ypmed.2011.02.014

Humbert, M. L., Chad, K. E., Spink, K. S., Muhajarine, N., Anderson, K. D., Bruner, M. W., Girolami, T. M., Odnokon, P., & Gryba, C. R. (2006). Factors that Influence Physical Activity Participation Among High-and Low SES Youth. *Qualitative Health Research, 16, 467-483.* doi:10.1177/1049732305286051

Husárová, D., Veselská, Z. D., Sigmundová, D., & Gecková, A. M. (2015). Age and Gender Differences in Prevalence of Screen Based Behaviour, Physical Activity and Health Complaints Among Slovak School-Aged Children. *European Journal for Public Health*, 23(Suppl), S30-S36. doi:10.2110/cejph.a4177

Inchley, J. C., Kirby, J. L. M., & Currie, C. (2008). Physical Activity in Scottish Schoolchildren (PASS). Project: Physical Activity Among Adolescents in Scotland. Retrieved from University of Edinburgh, Child and Adolescent Health Research Unit (CAHRU). http://www.cahru.org/content/04-publications/04-reports/pass_final_report.pdf

Inchley, J. C., Kirby, J. L. M., & Currie, C. (2011). Longitudinal Changes in Physical Self-Perceptions and Associations with Physical Activity During Adolescence. *Pediatric Exercise Science, 23(2), 237-249.*

Irvin, J. L., & Mullins, E. R. (2000). Transition into Middle School. *Middle School Journal, 31(3), 57-60.*

Ithròttabandalag Reykjavìkur, (1998). *Ithrottaskoli: Samstarf ithrottafelaga og grunnskola [Sportsschool: Cooperation between sports clubs and primary schools]*. Reykjavik, Iceland: Ithròttabandalag Reykjavìkur.

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, 18(1), 3-20.

Jang, H. (2008). Supporting Students' Motivation, Engagement, and Learning During an Uninteresting Activity. *Journal of Educational Psychology*, 100(4), 798-811. doi:10.1037/a0012841

Jang, H., Reeve, J., & Deci, E. (2010). Engaging Students in Learning Activities: It is Not Autonomy Support or Structure but Autonomy Support and Structure. *Journal of Educational Psychology*, 102(3), 588-600. doi:10.1037/a0019682.

Janssen, I., LeBlanc, A. G., & Allana, G. (2010). Systematic Review of the Health Benefits of Physical Activity and Fitness in School-aged Children and Youth. *International Journal of Behavioural Nutrition and Physical Activity,* 7(40), 1-16. doi:10.1186/1479-5868-7-40.

Janz, K. F., Lutuchy, E. M., Wenthe, P., & Levy, S. M. (2008). Measuring Activity in Children and Adolecents using Self-Report: PAQ-C and PAQ-A. *Medicine & Science in Sports & Exercise,* 40, 767-772. doi:10.1249/MSS.0b013e3181620ed1

Janz, K. F., Witt, J., & Mahoney, L. T. (1995). The stability of children's physical activity as measured by accelerometry and self-report. Medicine & Science in Sports & Exercise, 27, 1326–1332.

James, K. (2000). "You Can Feel Them Looking at You": The Experience of Adolescent Girls at Swimming Pools. *Journal of Leis, 32(2), 262-280.*

Jess, M., & Collins, D., (2003). Primary Physical Education in Scotland the Future in the Making. *European Journal of Physical Education, 8, 103-118.* doi:10.1080/1740898030080202

Jess, M., Dewar, K., & Fraser, G. (2004). Basic Moves: Developing a Foundation for Lifelong Physical Activity. *British Journal of Teaching in Physical Education*, 35(2), pp. 23–27.

Jones, R. A., Hinkley, T., Okely, A. D., & Salmon, J. (2013). Tracking Physical Activity and Sedentary behaviors in childhood. A Systematic Review. *American Journal of Preventive Medicine,* 44(6), 651-658. doi:10.1016/j.amepre.2013.03.001

Kavussanu, M., & Roberts, G. C. (2001). Moral Functioning in Sport: An Achievement Goal Perspective. *Journal of Sport & Exercise Psychology*, 23, 37-54.

Kawachi, I., & Berkman, L. F. (2003). Neighborhoods and Health. Oxford University Press, New York.

Karsten, L. (2006). It all Used to be Better? Different Generations on Continuity and Change in Urban Children's Daily Use of Space. *Children's Geographies,* 3(3), 275-290. doi:10.1080/14733280500352912

Kelly, P., Fitzsimons, C., & Baker, G. (2016). Should We Reframe How We Think About Physical Activity and Sedentary Behaviour Measurement? Validity and Reliability Reconsidered. *International Journal of Behavioral Nutrition and Physical Activity*, 13(32), 1-10. doi:10.1186/s12966-016-0351-4

Kirby, J., & Inchley, J. (2009). Active Travel to School: Views of 10-13 year old schoolchildren in Scotland. *Health Education*, 109(2), 169-183. doi:10.1108/09654280910936611

Kirby, J., Tibbins, C., Callens, C., Lang, B., Thorogood, M., Tigbe, W., & Robertson, W. (2012). Young People's Views on Accelerometer Use in Physical Activity Research: Findings from a User-Involvement Investigation. *ISRN Obesity*, 2012, 1-7. doi: 10.5402/2012/948504.

Koivusilta, L. K., Nupponen, H., & Rimpela, A. H. (2011). Adolescent Physical Activity Predicts High Education and Socio-Economic Position in Adulthood. *European Journal of Public Health*, 22(2), 203-209. doi:10.1093/eurpub/ckr037

Koorts, H., Mattocks, C., Ness, A. R., Deere, K., Blair, S. N., Pate, R. R., & Riddoch, C. (2011). The Association Between the Type, Context, and Levels of Physical Activity Amongst Adolescents. *Journal of Physical Activity and Health*, 8(8),

1057 - 1065.

Kowalski, K. C., Crocker, P. R. E., & Faulkner, R. A. (1997). Validation of the physical activity questionnaire for older children. *Pediatric Exercise Science, 9(12), 174-186.*

Kjonnisken, L., Fjortoft, I., & Wold, B. (2009). Attitude to Physical Education and Participation in Organized Youth Sports During Adolescence Related to Physical Activity in Young Adulthood: A 10-Year Longitudinal Study. *European Physical Education Review, 15, 139-154.* doi:10. 1177/1356336X09345231

Kjonniksen, L., Torsheim, T., & Wold, B. (2008). Tracking of Leisure-Time Physical Activity During Adolescence and Young Adulthood: A 10-Year Longitudinal Study. *International Journal of behavioral Nutrition and Physical Activity, 5, 69. doi:10.1186/1479-5868-5-69*

Knowles, A., Niven, A., & Fawkner, S. (2011). A Qualitative Examination of Factors Related to the Decrease in Physical Activity Behavior in Adolescent Girls During the Transition from Primary to Secondary School. *Journal of Physical Activity and Health, 8(8), 1084-1091.*

Kvale, S. (1996). Interviews: An Introduction to Qualitative Research Interviewing, London, London: Saga. In S. Punch, I. Marsh, M. Keating, Harden, J. (Eds), *Sociology. Making Sense of Society (p. 118).* Pearson Education Limited.

Laird, Y., Fawkner, S., Kelly, P., McNamee, & Niven, A. (2016). The Role of Social Support on Physical Activity Behaviour in Adolescent Girls: A Systematic Review and Meta-Analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 13(79), 1-14. doi:10.1186/s12966-016-0405-7

Lämmle, L., Worth, A., & Bös, K. (2012). Socio-Demographic Correlates of Physical Activity and Physical Fitness in German Children and Adolescents. *European Journal of Public Health*, 22(6), 880-884.

Lau, D. C. W. (2007). Canadian Clinical Practice Guidelines on The Management and Prevention of Obesity in Adults and Children. *Canadian Medical Association Journal*, 176(8), 1103-1106. doi:10.1503/cmaj.070306

Lau, J., Engelen, L., & Bundy, A. (2013). Parent's Perceptions of Children's Physical Activity Compared on Two Electronic Diaries. *Pediatric Exercise Science, 25(7), 124-137.* Learning and Teaching Scotland (2005). *Physical activity.* Retrieved from http://www.healthpromotingschools.co.uk/practiitioners/ physicalactivity/index.asp.

Learning and Teaching Scotland. (2009). Health and Wellbeing Outcomes. Retrieved from http://www.Itscotland.org.uk/curriculumforexcellance /healthandwellbeing.index.asp

Lee, Y., Min, K., Talbert, E. E., Kavazis, A. N., Smuder, A. J., Willis, W. T., & Powers, S. K. (2011). Exercise Protects Cardiac Mitochondria Against Ischemia - Reperfusion Injury. *Medicine and Science in Sports and Exercise*, 44(3), 397-405. doi:10.1249/MSS.0b01e318231c037

Lepper, M., & Cordova, D. (1992). A Desire to be Taught: Instructional Consequences of Intrinsic Motivation. 16(3), 187-208.

Lewis, K. (2014). Pupils' and Teachers' Experiences of School-Based Physical

Education a Qualitative Study. *British Medical Journal*, 4(9), 1-7. doi:10.1136/bmjopen-2014-0052777

Liese, A. D., Ma, X., Maahs, D. M., & Trilk, J. L. (2013). Physical Activity, Sedentary Behaviors, Physical Fitness, and Their Relation to Health Outcomes in Youth with Type 1 and Type 2 Diabetes: A Review of the Epidemiologic Literature. *Journal of Sport and Health Science,* 2(1), 21-38. doi:10.1016/j.jshs.2012.10.005

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic Inquiry. Beverly Hills, CA: Sage.

Lioret, S., Touvier, M., Dubuisson, C., Dufour, A., Calamassi-Tran, G., Lafay, L., & Marie, B. (2009). Trends in Child Overweight Rates and Energy Intake in France from 1999 to 2007: Relationship with Socioeconomic Status. *Obesity*, 17(5), 1092-1100. doi:10.1038/oby.2008.619

Livingstone, M. B. E., Coward, W. A., Prentice, A. M. et al. (1992). Daily Energy Expenditure in Free-Living Children: Comparison of Heart-Rate Monitoring with the Doubly Labelled Water Method. *American Journal of Clinical Nutrition*, 56, 343-352.

Livingstone, M. B. (2001). Childhood Obesity in Europe: A Growing Concern. *Public Health Nutrition*, 2(1A), 109-116.

Lloyd-Jones, D., Adams, R. J., Brown, T. M., et al. (2010). Heart Disease and Stroke Statistics - 2010 Update. *American Heart Association*, 12(17), e46-e215. doi:10.1161/CIRCULATIONAHA.109.192667

Lofland, J., & Lofland, L. H. (1995). *Analyzing social settings (3ed ed.).* Belmont, CA: Wadsworth.

Loprinzi, P. D., & Trost, S. G. (2010). Parental Influences on Physical Activity Behaviors in Preschool Children. *Preventive Medicine, 50, 129-133.* doi:10.1016/j.ypmed.2009.11.010

Lubans, D. R., Foster, C., & Biddle, S. J. H. (2008). A Review of Mediators of Behavior in Interventions to Promote Physical Activity Among Children and Adolescents. *Preventive Medicine*, 47, 463-470. doi:10.1016/j.ypmed.2008.07.011

Luguna, M., Ruiz, J. R., Gallardo, C., Garcia-Pastor, T., Lara, M., & Aznar, S. (2013). Obesity and Physical Activity Patterns in Children and Adolescents. *Journal of Paediatrics and Child Health*, 49, 942. doi:10.1111/jpc.12442

MacLean, J., Mullholland, R., Gray, S., & Horrell, A. (2015). Enabling Curriculum Change in Physical Education: The Interplay Between Policy Contructors and Practitioners. *Physical Education and Sport Pedagogy*, 20(1), 79-96. doi:10.1080/17408989.2013.798406

Malina, R. M. (2008). Biocultural factors in developing physical activity levels. In A. L. Smith, & S. J. H., Biddle (Eds), *Youth Physical Activity and Sedentary Behavior: Challenges and Solutions.* Champaign, IL: Human Kinetics.

Malina, R. M. (2001). Physical activity and fitness: pathways from childhood to adulthood. *American Journal of Human Biology, 13,* 162–72. doi:10.1002/15206300(200102/03)13:2<162::AID-AJHB1025>3.0.CO;2-T

Mandigo, J., & Holt, N. (2000). Putting Theory Into practice: How Cognitive Evaluation Theory can Help us Motivate Children in Physical Activity

Environments. *The Journal of Physical Education, Recreation & Dance, 71, 44-49.* doi:10.1080/07303084.2000.10605984

Marmeleira, J. F. F., Aldeias, N. M. C., & Medeira da Graça, L. (2012). Physical Activity Levels in Portuguese High School Physical Education. *European Physical Education Review.* 18(2), 191-204. doi:10.1177/135636X12440022

Markland, D., & Hardy, L. (1997). On the Factorial and Construct Validity of the Intrinsic Motivation Inventory. *Research Quarterly for Exercise and Sport, 68,* 20–32. doi:10.1080/02701367.1997.10608863

Marsh, H. W. (1996a). Physical Self-Description Questionnaire: Stability and Discriminant Validity. *Research Quarterly for Exercise and Sport, 67,* 249–64. doi:10.1080/0/2701367.1996.10607952

Marsh, H. W. (1996b). Construct validity of physical self-description questionnaire responses: Relations to external criteria. *Journal of Sport and Exercise Psychology, 18(2), 111-131.*

Marshall, S. J., & Welk, G. J. (2008). In A. L. Smith, & J. H. Biddle (Eds). *Youth Physical Activity and Sedentary Behaviour. Challenges and Solutions (pp. 3-24).* Human Kinetics.

Martin, K., Bremner, A., Salmon, J., Rosenberg, M., & Giles-Corti, B. (2012). School and Individual-Level Characteristics are Associated with Children's Moderate to Vigorous-Intensity Physical Activity During School Recess. *Australian and New Zealand Journal of Public Health*, 36(5), 469-477. doi:10.1111/j.1753-6405.2012. 00914.x

Martindale, R. & Nash, C. (2013). Sport science relevance and application: perceptions of UK coaches. *Journal of Sports Sciences, 31, 807-819.* doi:10.1080/02640414.2012.754924

Mason, J. (2002). Qualitative Researching, 2nd edn, London: Saga. In S. Punch, I. Marsh, M. Keating, & J. Harden (Eds), *Sociology. Making Sense of Society (p. 117).* Pearson Education Limited.

Mattocks, C., Ness, A., Leary, S., Tilling, K., Blair, S. N., Shield, J., Deere, K., Saunders, J., Kirkby, Smith, G. D., Wells, J., Wareham, N. Reilly, J., & Riddoch, C. (2008). Use of Accelerometers in a Large Field-Based Study of Children: Protocols, Design Issues, and Effects on Precision. *Journal of Physical Activity and Health*, 5(supp 1), 98-111.

McEvilly, N., Verheul, M., Atencio, M., & Jess, M. (2014). Physical Education for Health and Wellbeing: A Discourse Analysis of Scottish Physical Education Curricular Documentation. *Studies in the Cultural Politics of Education,* 35(2), 278-293. doi:10.1080/01596306.2012.745736

Mckenzie, T. L., Sallis, J. F., Broyles, S. L., Zive, M. M., Nadar, P. R., Berry, C. C., & Brennan, J. J. (2002). Childhood Movement Skills: Predictors of Physical Activity in Anglo American and Mexican American Adolescents. *Research Quarterly for Exercise and Sport*, 73(3), 238-244. doi:10.1080/02701367.2002.10609017

Menschik, D., Ahmed, S., Alexander, M. H., & Blum, R. W. (2008). Adolescent Physical Activities as Predictors of Young Adult Weight. *Archives of Pediatrics & Adolescent Medicine*, 162, 29-33.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative Research. A Guide to Design and Implementation (4th ed.).* Jossey-Bass. A Wiley Brand.

Mersh, R., & Fairclough, S. J. (2010). Physical Activity, Lesson Context and Teacher Behaviours Within the Revised English National Curriculum for Physical Education: A case study of one school. *European Physical Education Review, 16(1), 29-45.* doi:10.1177/1356336X10369199

Miles, J., & Shevlin, M. (2001) Applying Regression and Correlation: A Guide for Students and Researchers. Sage:London.

Moller, N. C., Tarp, J., Kamelarczyk, E. F., Brond, J. C., Klakk, H., & Wedderkopp, N. (2014). Do Extra Compulsory Physical Education Lessons Mean More Physically Active Children - Findings from the Childhood Health, Activity, and Motor Performance School Study Denmark (The CHAMPS-study DK). *International Journal of Behavioral Nutrition and Physical Activity, 11, 1-13.* doi:10.1186/s12966-014-0121-0

Moore, J. B., Hanes, Jr. J. C., Barbeau, P., Gutin, B., Trevino, R. P., & Yin, Z. (2007). Validation of the Physical Activity Questionnaire for Older Children in Children of Different Races. *Pediatric Exercise Science,* 19(6), 6-19.

Morgan, K., & Kingston, K. (2010). Promoting a Mastery Motivational Climate in a Higher Education Sports Class. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 9(1), 73-84. doi:10.3794/johlste.91.236

Morgan, B. L., & Wilson Van Voorhis, C. R. (2007). Understanding Power and Rules of Thumb for Determining Sample Sizes. *Tutorials for Quantitative Research in Psychology,* 3(2), 43-50. doi:10.20982/tqmp.03.2.p043

Morris, E., & Burkett, K. (2011). Mixed Methodologies: A New Research Paradigm or Enhanced Quantitative Paradigm. *The Online Journal of Cultural Competence in Nursing and Healthcare,* 1(1), 27-36.

Morrissey, J. L., Wenthe, P. J., Letuchy, E. M., Levy, S. M., & Janz, K. F. (2012). Specific Types of Family Support and Adolescent Non-School Physical Activity Levels. *Pediatric Exercise Science, 24(3), 333-346.*

Mota, J., Gomes, H., Almeida, M., Ribeiro, J. C., & Santos, M. P. (2007). Leisure Time Physical Activity, Screen Time, Social Background, and Environmental Variables in Adolescents. *Pediatric Exercise Science,* 19(3), 279-290.

Mota, J., Pedro, S., Santos, M. P., Ribeiro, J. C., Oliveira, J., & Duarte, J. A. (2005). Physical Activity and School Recess Time: Differences Between the Sexes and the Relationship Between Children's Playground Physical Activity and Habitual Physical Activity. *Journal of Sports Sciences, 23, 269-275.* doi:10.1080/02640410410001730124

Moy, B., Renshaw, I., & Davids, K. (2016). The Impact of Nonlinear Pedagogy on Physical Education Teacher Education Teacher Education Students' Intrinsic Motivation. *Physical Education and Sport Pedagogy*, 21(5), 517-538. doi:10.1080/17408989.2015.1072506

Murtagh, E. M., & Murphy, M. H. (2011). Active Travel to School and Physical Activity Levels of Irish Primary Schoolchildren. *Pediatric Exercise Science, 23(2), 230-236.*

Mutrie, N., & Parfitt, G. (1998). Physical Activity and its Link 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. (pp.49-68). England: Health Education Authority.

Mullan, E. (2003). Do You Think that Your Local Area is a Good Place for Young People to Grow Up? The Effects of Traffic and Car Parking on Young People's Views. *Health & Place,* 9(4), 351-360. doi:10.1016/S1353-8292(02)00069-2

Mullins, E. R., & Irvin, J. L. (2000). Transition into Middle School. *Middle School Journal,* 31(3), 1-6.

Mullan, E., Albinson, J., & Markland, D. (1997). Children's Perceived Physical Competence at Different Categories of Physical Activity. *Pediatric Exercise Science,* 9(3), 237-242.

National Health and Medical Research Council (2003). *Clinical Practice Guidelines for the Management of Overweight and Obesity in Children and Adolescents.* Canberra, Australia. Retrieved from http://trove.nla.gov.au/work/10268687?q&versionId=12064941

National Institute for Health and Clinical Excellence (2009). Physical Activity for Children and Young People. Retrieved from http://guidance.nice.org.uk/ph17

National Institute for Health and Clinical Excellence (2013). Managing Overweight and Obesity Among Children and Young People: Lifestyle Weight Management Services. Retrieved from http://guidance.nice.org.uk/ph47

National Osteoporosis Society Online (2016). Retrieved from http://www.nos.org.uk/osteo.asp

Nelson, M. C., Neumark-Stzainer, D., Hannan, P. J., & Sirard, J. R. (2006). Longitudinal and Secular Trends in Physical Activity and Sedentary Behavior During Adolescence. *Pediatrics, 118: e1627-e1634.*

Ng, M., Fleming, T., Robinson, M., Thomson, B. et al. (2014). Global, Regional, and National Prevalence of Overweight and Obesity in Children and Adults During 1980 - 2013: A Systematic Analysis for the Global Burden of Disease study 2013. *Lancet,* 384, 766-781. doi:10.1016/S0140-6736(14)60767-4

Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-Determination Theory Applied to Health Contexts: A Meta-Analysis. *Association for Psychological Science,* 7(4), 325-340. doi:10.1177/1745691612447309

Nicholls, J. G. (1984). Achievement Motivation: Conceptions of Ability, Subjective Experience, Task Choice, and Performance. *Psychological Review,* 91(3), 328-346.

Niven, A., Fawkner, S., Knowles, A-M., Henretty, J., & Stephenson, C. (2009). Social Physique Anxiety and Physical Activity in Early Adolescents Girls: The Influence of Maturation and Physical Activity Motives. *Journal of Sports Sciences, 27(3) 299-305.* doi:10.1080/02640410802578164

Noy, C. (2008). Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research. *International Journal of Social Research Methodology,* 11(4), *327-344.* doi:10.1080/13645570701401305

Ntoumanis, N. (2001). A Self-Determination Approach to the Understanding of Motivation in Physical Education. *British Journal of Educational Psychology,*

71(2), 225–242.

Ntoumanis, N., Pensgaard, A., Martin, C., & Pipe, K. (2004). An Idiographic Analysis of Amotivation in Compulsory School Physical Education. *Journal od Sport and Exercise Psychology,* 26(2), 197-214.

Oates, J., Kwiatkowski, R., & Coultard, L. M. (2010). Code of Human Ethics. The British Psychology Society. Retrieved from https://www.bps.org.uk/sites/default/files/documents/code_of_human_research_ethics.pdf

Occhino, J. L., Mallet, C. J., Rynne, S. B., & Carlisle, K. N. (2014). Autonomy-Supportive Pedagogical Approach to Sports Coaching: research, Challenges and Opportunities. *International Journal of Sports Science & Coaching*, 9(2), 401-415.

O'Connor, T. M., Cerin, E., Lee, R. E., Parker, N., Chen, T-A., Hughes, S. O., Mendoza, J. A., & Baranowski, T. (2014). Environmental and Cultural Correlates of Physical Activity Parenting Practices Among Latino Parents with Preschool-Aged Children: Niños Activos. *BioMed Central Public Health*, 14(707), 1-9.

Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of Childhood and Adult Obesity in the United States, 2011-2012. *Journal American Medical Association,* 311(8), 806-814.

Ogilvie, D., Mitchell, R., Mutrie, N., Petticrew, M., & Platt, S. (2008). Personal and Environmental Correlates of Active Travel and Physical Activity in a Deprived Urban Population. *International Journal of Behavioral Nutrition and Physical Activity, 5, 43.* doi:10.1196/1479-5868-5-43

Okely, A. D., Booth, M. L., & Chey, T. (2004). Relationship Between Body Composition and Fundamental Movement Skills Among Children and Adolescents. *Research Quarterly for Exercise and Sport, 75(3), 238-247.* doi:10.1080/02701367.2004.10609157

Onwuegbuzie, A. L., & Leech, N. L. (2005). On Becoming a Pragmatic Researcher: The Importance of Combining Quantitative and Qualitative Research Methodologies. *International Journal of Social Research Methodology*, 8(5), 375-387. doi:10.1080/13645570500402447

Orr, J. M., Sackett, P. R., & Dubois, C. L. Z. (1991). Outlier Detection and Treatment in I/O Psychology: A Survey of Researcher Beliefs and an Empirical Illustration. *Personnel Psychology*, 44, 473-486.

Owen, K. B., Astell-Burt, T., & Lonsdale, C. (2013). The relationship between self-determined motivation and physical activity in adolescent boys. *Journal of Adolescent Health, 53, 420-422.* doi:10.1016/j.jadohealth.2013.05.007

Oude Luttikhuis, H., Baur, L., Jansen, H., et al. (2009). Interventions for Treating Obesity in Children. Cochrane Database Syst. Rev. CD001872.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm Policy Mental Health*, 42, 533-544. doi:10.1007/s10488-013-0528-y

Parish, L. E., & Treasure, D. C. (2003). Physical Activity and Situational Motivation in

Physical Education: Influence of the Motivational Climate and Perceived Ability. *Research Quarterly for Exercise and Sport*, 74(2), 173-182. doi:10.1080/02701367.2003.10609079

Pate, R. R., Ward, D. S., Saunders, R. P., Felton, G., Dishman, R. K., & Dowda, M. (2005) Promotion of Physical Activity Among High-School Girls: A Randomized Controlled Trial. *American Journal of Public Health. 9*5(9): 1582–7.

Patton, M. Q. (1990). *Qualitative Evaluation Methods* (2nd ed.). Beverly Hills, CA: Saga.

Patton, M. Q. (2002). Qualitative Evaluation and Research Methods (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Patton, G. C., Coffey, C. C., Carlin, J. B., Sawyer, S. M., Williams, J., Olsson, C. A., & Wake, M. (2011). Overweight and Obesity Between Adolescence and Young Adulthood: A 10-year Prospective Cohort study. *Journal of Adolescent Health*, 48(3), 275-280. doi:10.10.1016/j.jadohealth.2010.06.019

Pearson, N., Braithwaite, R. E., Biddle, S. J. H., van Sluijs, E. M. F., and Atkin, A. J. (2014). Association Between Sedentary Behaviour and Physical Activity in Children and Adolescents: A Meta-Analysis. *Obesity Reviews*, 15, 666-675. doi:10.1111/obr.12188

Péneau, S., Salanave, B., Maillard-Teyssier, L. et al., (2009). Prevalence of Overweight in 6 to 15-year-old children in Central/Western France from 1996 to 2006: trends towards stabilization. *International Journal of Obesity*, 33, 401-407. doi:10.1038/ijo.2009.31

Pinhas-Hamiel, O., & Zeitler, P. (2007). Clinical Presentation and Treatment of Type 2 Diabetes in Children. *Pediatric Diabetes*, 8(9), 16-27.

Plotnikoff, R. C., Costigan, S. A., Karunamuni, N., & Lubans, D. R. (2013). Social Cognitive Theories Used to Explain Physical Activity Behavior in Adolescents: A Systematic Review and Meta-Analysis. *Preventative Medicine*, 56, 245-253. doi:10.1016/j.ypmed

Podlog, L., & Eklund, R. (2006). A Longitudinal Investigation of Competitive Athletes' Return to Sport Following Serious Injury. *Journal of Applied Sport Psychology*, 18(10, 44-68.

Polit, D. F., & Beck, C. T. (2010). Generalization in Quantitative and Qualitative Research: Myths and Strategies. *International Journal of Nursing Studies*, 47(11), 1451-1458. doi:10.1016/j.ijnurstu.2010.06.004

Pratt, S., & George, R. (2005). Transferring Friendship: Girls' and Boys' Friendships in the Transition from Primary to Secondary School. *Children & Society, 19, 16-26.* doi:10.1002/CHI.830

Priestley, M., & Humes, W. (2010). The Development of Scotland's Curriculum for Excellence: Amnesia and Déjà vu. *Oxford Review of Education,* 36(3), 345-361.

Prusak, K. A., Treasure, D. C., Darst, P. W., & Pangrazi, R. P. (2004). The Effects of Choice on the Motivation of Adolescent Girls in Physical Education. *Journal of Teaching in Physical Education*, 23, 19 -29.

Pulgaron, E. R., & Delamater, A. M. (2014). Obesity and Type 2 Diabetes in Children:

Epidemiology and Treatment. *Current Diabetes Reports,* 14(508), 1-12. doi:10.1007/s11892-014-0508-y

Punch, S., Marsh, I., Keating, M., & Harden, J. (2013). Sociology: Making Sense of Society (5th ed.). Pearson Education Limited.

Pugliese, J., & Tinsley, B. (2007). Parental Socialization of Child and Adolescence Physical Activity: A Meta-Analysis. *Journal of Family Psychology,* 21(3), 331-343. doi:10.1037/0893-3200.21.3.331

Raedeke, T. D., Focht, B. C., & Scales, D. (2007). Social Environmental Factors and Psychological Responses to Acute Exercise for Socially Physiques Anxious Females. *Psychology of Sport and Exercise, 8, 463-476.* doi:10.1016/j.psychsport.2006.10.005

Rani Das, M. (2015). An Empirical Study to Analyse the Effectiveneness of the Physical Education or Games Classes to Promote Physical Activity in Girls' School of West Bengal. *Online International Interdisciplinary Research Journal, 5, 287-292.*

Razavi, T. (2001). Self-Report Measures: An Overview of Concerns and Limitations of Questionnaire use in Occupational Stress Research. Southampton, UK, University of Southampton, p.23 (Discussion Papers in Accounting and Management Science pp. 01-175).

Reeve, J. (2002). Self-determination Theory Applied to Educational Settings. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of Self-Determination Research,* (pp. 183–203). New York, NY: The University of Rochester Press.

Reeve, J. (2009). Why Teachers Adopt a Controlling Motivating Style Towards Students and How They Can Become More Autonomy Supportive. *Educational Psychologist,* 44(3), 159-175. doi:10.1080/00461520903028990

Reeve, J. L., Duffy, A. M., O'Brien, B., & Samali, A. (2005). Don't Lose Heart - Therapeutic Value of Apoptosis Prevention in the Treatment of Cardiovascular Disease. *Journal of Cell and Molecular Medicine,* 9(3), 609-622.

Reeve, J., & Jang, H. (2006). What Teachers Say and do to Support Students' Autonomy During a Learning Activity. *Journal of Educational Psychology,* 98(1), 209-218. doi:10.1037/0022-0663.98.1.209

Reilly, J. J., Penpraze, V., Hislop, J., Davies, G., Grant, S., & Paton, J. Y. (2008). Objective Measurement of Physical Activity and Sedentary Behaviour: A Review with New Data. *British Medical Journals, Archives of Disease in Children,* 93(7), 614-619. doi: 10.1136/adc.2007.133272.

Reilly, J. J., Jackson, D. M., Montgomery, C., Kelly, L. A., Slater, C., Grant, S., & Paton, J. Y. (2004). Total Energy Expenditure and Physical Activity in Young Scottish Children: Mixed Longitudinal Study. *The Lancet,* 363, 211-212.

Rey-Lòpez, J. P., Vicente-Rodrìguez, G., Biosca, M., & Moreno, L. A. (2008). Sedentary Behaviour and Obesity Development in Children and Adolescents. *Nutrition, Metabolism and Cardiovascular Diseases,* 18(3), 242-225.

Riddoch, C. J., Mattocks, C., Deere, K., Saunders, J., Kirby, J., Tilling, K., Leary, S. D., Blair, S. N., & Ness, A. R. (2007). Objective Measures of Levels and Patterns of Physical Activity. *Archives of Disease in Childhood*, 92, 963-969. doi: 10.10.1136/adc.2006.112136.

Ridgers, N. D., & Fairclough, S. (2011). Assessing Free-Living Physical Activity Using Accelerometry: Practical Issues for Researchers and Practitioners. *European Journal of Sport Science,* 11(3), 205-213. doi: 10.1080/17461391.2010.501116.

Ried-Larsen, M. Grøntved, A., Kristensen, P. L., Froberg, K., & Andersen, L. B. (2015). Moderate-and-Vigorous Physical Activity from Adolescence to Adulthood and Subclinical Atherosclerosis in Adulthood: Prospective Observations from the European Youth Heart study. *British Journal of Sports Medicine,* 49, 107-112. doi:10.1136/bjsports-2013-092409

Robertson, W., Stewart-Brown, S., Wilcock, E., Oldfield, M., & Thorogood, M. (2011). Utility of Accelerometers to Measure Physical Activity in Children Attending and Obesity Treatment Intervention. *Journal of Obesity,* 2011, 1-8. doi: 10.1155/2011/398918.

Rowland, T. W. (2001). The role of physical activity and fitness in children in the prevention of adult cardio-vascular disease. *progress in Pediatric Cardiology*, 12, 199-203. doi:10.1016/S1058-9813(00)00074-6

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25, 54-67.* doi:10.1006/ceps.1999.1020

Ryan, R. M., & Deci, E. L. (2002). Overview of Self-Determination Theory: An Organismic Dialectical Perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of Self-Determination Research*, (pp. 3–33). New York, NY: The University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2002). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development and Well-Being. American Psychologist, 55(1), 68-78.

Ryan, R. M., & Deci, E. L. (2007). Active human nature: Self-determination theory and the promotion and maintenance of sport, exercise and health, In Hagger, M.S. and Chatzisarantis, N.L.D. Ed. Intrinsic Motivation and Self-Determination in Exercise and Sport. pp.1-20.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic Motivation and Exercise Adherence. *International Journal Sport Psychological, 28*, 335–354.

Saldaña, J. (2013). The Coding Manual for Qualitative Researchers (Second Edition). SAGE.

Salmon, P. (2001). Effects of Physical Exercise on Anxiety, Depression, and Sensitivity to Stress: A Unifying Theory. *Clinical Psychology Review,* 21(1), 33-61.

Sallis, J. F., & Saelens, B. E. (2000). Assessment of Physical Activity by Self-Report: Status, Limitations, and Future Directions. *Research Quarterly for Exercise and Sport*, 71(supp2), 1-14. doi: 10.1080/02701367.2000.11082780.

Sallis, J. F., McKenzie, T. L., Alcaraz, J. E., Kolody, B., Faucette, N., & Hovell, M. F. (1997). The Effects of a 2-Year Physical Education Program (SPARK) on Physical Activity and Fitness in Elementary School Students. *American Journal of Public Health, 87(8),* 1328-1334.

Sallis, J. F., & Owen, N. (1999). *Physical Activity and Behavioral Medicine.* Thousand

Oaks, CA: Sage.

Sallis, J. F., & Owen, N., Fotheringham, M. J. (2000). Behavioral Epidemiology: A Systematic Framework to Classify Phases of Research on Health Promotion and Disease Prevention. *Medical Journal of Annals of Behavioral Medicine,* 22(4), 294-298. doi:10.1007/BF02895665

Sallis, J. F., Nader, P. R., Broyles, S. L., Berry, C. C., Elder, J. P., McKenzie, T. L., & Nelson, J. A. (1993). Correlates of Physical Activity at Home in Mexican-American and Anglo-American Preschool Children. *Health Psychology,* 12(5), 390-398.

Sallis, J. F., Linton, L. S., & Kraft, M. K. (2005). The First Active Living Research Conference: Growth of a Transdisciplinary Field. *American Journal of Preventive Medicine*, 28(2S2), 93-95. doi:10.1016/j.amepre.2004.10.032

Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. (2006). An Ecological Approach to Creating Active Living Communities. *Annual Reviews Public Health,* 27, 297-322. doi:10.1146/annurev.publhealth.37.021405.102100

Sallis, J. F., Prochaska, J. J., & Taylor, C. (2000). A Review of Correlates of Physical Activity of Children and Adolescents. *Medicine and Science in Sports and Exercise,* 32(5) 963-975. doi:10.1.1.457.1133

Sallis, J. F., Simons-Morton, B. G., Corbin, C. B., Epstein, L. H., Faucette, N., Iannotti, R. J., Killen, J. D., Klesges, R. C., & Petray, C. K. (1992). Determinants of Physical Activity and Interventions in Youth. Medicine and Science in Sports and Exercise, 24(Suppl 6), 248-257.

Salvo, V. Di., Baron, R. Tschan, H., Calderon Montero, F. J., Bachl, N., & Pigozzi, F. (2007). Performance Characteristics According to Playing Position in Elite Soccer. *International Journal of Sports Medicine, 28, 3, 222-227.* doi:10.1055/s-2006-924294

Sanders, G. J., Juvancic-Heltzel, J., Williamson, M. L., Roemmich, J. N., Feda, D. M., & Barkley, J. E. (2016). The Effect of Increasing Autonomy Through Choice on Young Children's Physical Activity Behavior. *Journal of Physical Activity and Health*, 13, 428-432. doi:10.1123/jpah.2015-0171

Schoeppe, S., Duncan, M. J., Badland, H., Oliver, M., & Curtis, C. (2013). Associations of Children's Independent Mobility and Active Travel with Physical Activity, Sedentary Behaviour and Weight Status: A Systematic Review. *Journal of Science and Medicine in Sport, 16, 312-319.* doi:10.1016/j.jsams.2012.11.001

Scottish Executive (2003). *Let's make Scotland more active: A strategy for physical activity,* Edinburgh: HMSO. Retrieved from http://www.gov.scot/Publications/2003/02/16324/17895

Scottish Executive (2004). *The Report of the Review Group on Physical Education,* Edinburgh: HMSO. Retrieved from http://www.gov.scot/Publications/2004/06/19482/38627

Scottish Sports Council (1999). Youth Sport in Scotland: *primary Schools*, Edinburgh: Scottish Sports Council. Retrieved from https://sportscotland.org.uk/documents/participation/sportsparticipation99.pdf

Scottish Index of Multiple Deprivation (2012). A National Statistics Publication for Scotland. Retrieved fm http://www.simd.scotland.gov.uk/publication-2012.

Schunk, D. H. (1991). Self-Efficacy and Academic Motivation. *Educational Psychologist,* 26(3-4), 207-231. doi:10.1080/00461520.1991.9653133

Schnurr, T. M., Bech, B., Nielsen, T. R. H., Andersen, I. G., Hjorth, M. F., Aadahl, M., Fonwig, C. E., Hansen, T., & Holm, J-C. (2017). Self-Reported Versus Accelerometer-Assessed Daily Physical Activity in Childhood Obesity Treatment. *Perceptual and Motor Skills*, 124(4), 795-811. doi: 10.1177/0031512517710880.

Seale, J., Rumpler, W., Conway, J., & Miles, C. (1990). Comparison of doubly labeled water, intake-balance, and direct- and indirect-calorimetry methods for measuring energy expenditure in adult men. *American Journal of Clinical Nutrition, 52*(1), 66-71.

Seabre, A. F., Mendonca, D. M., Thomis, M. A., Malina, R. M., & Maia, J. A. (2011). Correlates of Physical Activity in Portuguese Adolescents from 10 to 18 years. *Scandinavian Journal of Medicine Science & Sports,* 21(2), 318-323. doi:10.1111/j.1600-0838.2009.01030.x

Sebire, S. J., Jago, R., Fox, K. R., Edwards, M. J., & Thompson, J. L. (2013). Testing a Self-Determination Theory Model of Children's Physical Activity Motivation: A Cross-Sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, 10(111), 1-9.

Seefeldt, V., Ewing, M. E., & Walk, S. (1992). Overview of Youth Sport Programs in the United States. Washington, DC: Carnegie Council on Adolescent Development. Retrieved form http://files.eric.ed.gov/fulltext/ED360267.pdf

Seefeldt, V., & Haubenstricker, J. (1987). Patterns, Phases or Stages, an Analytical Model for the Study of Developmental Movement. In Kelso, J. A. S. & Clark, J. E (eds), *The Development of Movement Control and Coordination*, pp 309–319, New York: Wiley.

Sharp, R. (1990). Physical Education in Scottish Secondary Schools: report of a Nationwide Survey. Glasgow: Jordanhill College.

Shannon, C. S. (2014). Exploring the Leisure Experiences of Children Who are Overweight and Obese: Parent and Child Perspectives. *Canadian Association for Leisure studies,* 38(2), 139-163. doi:10.1080/14927713.2014.966586

Shenton, A. K. (2004). Strategies for Ensuring Trustworthiness in Qualitative Research Projects. *Education for Information,* 22, 63-65.

Shepard, R. J. (1996). Habitual Physical Activity and Academic Performance. *Nutritional Review*, 54(4), S32-S36.

Shephard, R. J. (1997). Curricular Physical Activity and Academic Performance. *Pediatric Exercise Science,* 9(2), 113-126. doi:10.1123/pes.9.2.113

Singh, A., Uijtdewilligen, L., Twisk, J. W. R., van Mechelen, W., & Chinapaw, M. J. M. (2012). Physical Activity and Performance at School: A Systematic Review of the Literature Including a Methodological Quality Assessment. *Arch Pediatrics Adolescence Medicine,* 166: 49–55.

Sirard, J., & Pate, R. (2001). Physical activity assessment in children and adolescents. *Sports Medicine, 31(6), 439-454.*

Silverman, D. (2010). Collecting and analysing your data. In D. Silverman (Eds.), *Doing qualitative research (pp. 189-192).* Sage Publications Ltd.

Sims, J., Scarborough, P., & Foster, C. (2015). The Effectiveness of Interventions on Sustained Childhood Physical Activity: A Systematic Review and Meta-Analysis of Controlled Studies. PLoS ONE, 10(7), e0132935. doi:10.1371/journal.pone.0132935

Simmons, R. G., & Blyth, D. A. (1987). *Moving into Adolescence: The Impact of Pubertal Change and School Context.* Hawthorne, NY: Aldine de Gruyter.

Sinha, R., Fisch, G., Teague, B., et al. (2002). Prevalence of Impaired Glucose Tolerance Among Children and Adolescence with Marked Obesity. *The New England Journal of Medicine,* 346(11), 802-810. doi:10.1056/NEJMoa012578

Smith, A. L., & Biddle, S. J. H. (2008). Youth Physical Activity and Sedentary Behavior. Challenges and Solutions. Human Kinetics.

Soenens, B., Vansteenkiste, M. (2005). Antecedents and Outcomes of Self-Determination in 3 Life Domains: The Role of Parents' and teachers' Autonomy Support. *Journal of Youth and Adolescence*, 34(6), 589-604. doi:10.1007/s10964-005-8948-y

Soini, M. (2006). The Relationship of Motivational Climate to Physical Activity Intensity and Enjoyment Within Ninth Grade Pupils in School Physical Education Lessons (Unpublished doctoral dissertation). University of Jyväskylä, Jyväskylä, Finland. Retrieved from https://jyx.jyu.fi/dspace/bitstream/handle/123456789/13523/9513926648.pdf?sequence=1

Sollerhed, A. C., Apitzsch, E., Rastam, L., & Ejlertsson, G. (2008). Factors Associated with Young Children's Perceived Competence and Self-Reported Physical Activity. *Health Education Research,* 23(1), 125-136. doi:10.1093/her/cym010

Sport England (2003). Young People and Sport National Survey, 2002. Retrieved from https://www.sportengland.org/media/.../young-people-and-sport-2002-headline-1.pdf

Sportscotland (2003). *Active Schools.* Retrieved from http://www.sportscotland .org.uk/Documents/Annual_reports?AnnualReport2002_2003.pdf

Sportscotland (2006). Increasing Demand for Sport and Physical Activity for Adolescent Girls in Scotland. Retrieved from http://www.sportscotland.org.uk /Documents/Resources/Increasingdemandforsportandphysicalactivity foradolescentgirlsinScotland.pdf

Sports Council Wales (2009). Sports Update. Young People's Participation in Sport. Retrieved from http://www.sports-council-wales.org.uk

Sproule, J., Wang, C. K. J., Morgan, K., McNeill, M., & McMorris, T. (2007). Effects of Motivational Climate in Singaporean Physical Education Lessons on Intrinsic Motivation and Physical Activity Intention. *Personality and Individual Differences,* 43, 1037-1049. doi:10:1016/j.paid.2007.02.017

Stalsberg, R., & Pedersen, A. V. (2010). Effects of Socioeconomic Status on the Physical Activity in Adolescents: A Systematic Review of the Evidence. *Scandinavian Journal of Medicine & Science in Sports,* 20, 368-383. doi:10.1111/j.1600-0838.2009.01047.x

Stamatakis, E., Wardle, J., & Cole, T. J. (2010). Childhood Obesity and Overweight Prevalence Trends in England: Evidence for Growing Socioeconomic Disparities. *International Journal of Obesity,* 34, 41-47. doi:10.1038/Ijo.2009.217

Stenbacka, C. (2001). Quality in Qualitative Research. *Quality Inquiry,* 5(4), 465-478.

Sterdt[a], E., Liersch[a], S., & Walter, U. (2014). Correlates of Physical Activity of Children and Adolescents: A Systematic Review of Reviews. *Health Education Journal*, 73(1), 72-89. doi:10.1177/0017896912469578

Steptoe, A. S., & Butler, N. (1996). Sports participation and emotional wellbeing in adolescents: THE LANCET, 347(9018), 1789-1792.

Stokols, D. (1992). Establishing and Maintaining Healthy Environments: Toward a Social Ecology of Health Promotion, *American Psychologist,* 4(1), 6–22.

Stolz, S. A., & Kirk, D. (2015). David Kirk on Physical Education and Sport Pedagogy: In Dialogue with Steven Stolz (Part 2). *Asia-Pacific Journal of Health, Sport and Physical Education,* 6(62), 127-142. doi:10.10.1080/18377122.2015.10551265

Stratton, G., Fairclough, S. J., & Ridgers, N. D. (2008). 'Physical Activity Levels During the School Day,' in A. J. Smith and S. J. H. Biddle (eds) *Youth Physical Activity and Sedentary Behaviors: Challenges and Solutions, pp. 321-350.* Champaign, IL: Human Kinetics.

Strong, W. B., Malina, R. M., Blimkie, C. J. R., Daniels, S. R., Dishman, R. K., Gutin, B., Hergenroeder, A. C., Must, A., Nixon, P. A., Pivarnik, J. M., Rowland, T., Trost, S., & Trudeau, F. (2005). Evidence based physical activity for school-age youth. *The Journal of Pediatrics, 146, 732-737.* doi://dx.doi.org/10.1016/j.jpeds.2005.01.055.

Subramaniam, P., & Silverman, S. (2002). Using Complimentary Data: An Investigation of Student Attitudes in Physical Education. *Journal of Sport Pedagogy, 8(1), 74-91.*

Sugerman, D. T. (2014). Osteoporosis is the Most Common Bone Disease and is Twice as Common in Women as in Men. *Journal American Medical Association*, 311(1), 104.

Sutherland, R., Campbell, E., Lubans, D. R. et al., (2016). Physical Education in Secondary Schools Located in Low-Income Communities: Physical Activity Levels, Lesson Context and Teacher Interaction. *Journal of Science and Medicine in Sport,* 19, 135-141. doi:10.1016/j.jsams.2014.12.003

Tammelin, T., Näyhä, S., Hills, A., & Järvelin, M. R. (2003). Adolescents Participation in Sports and Adults Physical Activity. *American Journal of Preventive Medicine*, 24(1), 22-28. doi:10.1016/S0749-3797(02)00575-5

Tan, V. P. S., Macdonald, H. M., Kim, S., Nettlefold, L., Gabel, L. Ashe, M. C., & McKay, H. A. (2014). Influence of Physical Activity on Bone Strength in Children and Adolescents: A Systematic Review and Narrative Synthesis. *Journal of Bone and Mineral Research*, 29(10), 2161–2181. doi:10.1002/jbmr.2254

Tashakkori, A., & Teddlie, C. (1998). Mixed Methodology: Combining Qualitative and Quantitative Approaches. Thousand Oaks, CA: Sage.

Tavakol, M., & Dennick, R. (2011). Making Sense of Cronbach's Alpha. *International Journal of Medical Education*, 2, 53-55. doi:10.5116/ijme.4dfb.8dfd

Taylor, N., Conner, M., & Lawton, R. (2012). The Impact of Theory on The Effectiveness of Worksite Physical Activity Interventions: A Meta-Analysis and Meta-Regression. *Health Psychology Review*, 6(1), 33-77. doi:10.1080/17437199.2010.533441

Taylor, I. M., Spray, C. M., & Pearson, N. (2014). The influence of the physical education environment on children's well-being and physical activity across the transition from primary to secondary school. *Journal of Sport and Exercise Psychology, 36, 574-583.* doi:10.1123/jsep.2014-0038

Teixeira, P. J., Carraca, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, Physical Activity, and Self-Determination Theory: A Systematic Review. *International Journal of Behavioral Nutrition and Physical Activity*, 9(78), 1-30.

Telama, R., Yang, X., Viikari, J., Välimäki, I., Wanne, O., & Raitakari, O. (2005). Physical Activity from Childhood to Adulthood: a 21-Year Tracking Study. *American Journal of Preventive Medicine, 28,* 267–73. doi:10.1016/j.amepre.2004.12.003

Telama, R., Yang, X., Leskinen, E. et al. (2013). Tracking of Physical Activity from Early Childhood Through Youth into Adulthood. journal of American Sports Medicine, 34, 955-962. doi:10.1249/MSS.0000000000000181

Telford, R. M., Telford, R. D., Cochrane, T., Cunningham, R. B., Olive, L. S., & Davey, R. (2016). The Influence of Sport Club Participation on Physical Activity, Fitness and Body Fat During Childhood and Adolescence: The LOOK Longitudinal Study. *Journal of Science and Medicine in Sport*, 19, 400-406. doi:10.1016/j.jsams.2015.04.008

Telford, R. M., Telford, R. D., Olive, L. S., Cochrane, T., & Davey, R. (2016). Why are Girls Less Physically Active than Boys? Findings from the LOOK. Longitudinal Study. *PLoS ONE*, 11(3), 1-11. doi:10.1371/journal.pone.0150041

Terwee, C. B., Mokkink, L. B., van Poppel, M . N .M., Chinapaw, M. J. M., van Mechelen, W., & de Vet, H. C. W. (2010). Qualitative Attributes and Measurement Properties of Physical Activity Questionnaires. *Journal of Sports Medicine*, 40(7), 527-537. doi:0112-1642/10/0007-0525/S49.95/0

The Scottish Government. (2010). The Scottish Health Survey, 2009. Retrieved from http://www.gov.scot/resource/doc/325403/0104975.pdf

The Scottish Government. (2015). The Scottish Health Survey, 2015. Retrieved from http://www.gov.scot/Publications/2015/06/2579/7

The Scottish Government. (2015). The Scottish Health Survey, 2015. Retrieved from http://www.gov.scot/resource/doc/978/1/78652/461/4

The Scottish Government. (2012). Curriculum for Excellence Scotland, Physical Education, Physical Activity and Sport. Retrieved from https://www.educationscotland.gov.uk/Images/all_experiences_outcomes_tcm4-539562.pdf

The Scottish Government. (2015). Curriculum for Excellence Scotland, Physical Education, Physical Activity and Sport: Retrieved from https:// www.educationscotland.gov.uk/Images/all_experiences_outcomes_tcm4-539562.pdf

The Scottish Government. (2016). The Scottish Health Survey. (Volume 1: Main Report). Retrieved from http://www.gov.scot/Publications/2016/09/2764/332592

The Scottish Government. (2016). Physical Activity Guidelines for Children and Young People (2-18 years). Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213739/dh_128144.pdf

Thomas, J. R., Nelson, J. K., & Silverman, S. J. (2011). Research Methods in Physical Activity. Champaign, Human Kinetics.

Thøgersen-Ntoumani, C., & Ntoumanis, N. (2006). The Role of Self-Determined Motivation in the Understanding of Exercise-Related Behaviours, Cognitions and Physical Self-Evaluations. *Journal of Sports Sciences, 24(4), 393-404. doi:10.1080/02640410500131670*

Toftegaard-Støckel, J., Nielson, G. A., Ibsen, B., & Andersen, L. B. (2011). Parental, Socio and Cultural Factors Associated with Adolescents' Sports Participation in Four Danish Municpalities. *Scandinavian Journal of Medicine and Science in Sports,* 21, 606-611. doi:10.1111/j.1600-0838.2010.01093.x

Townsend, N., Rutter, H., & Foster, C. (2012). Age Differences in the Association of Childhood Obesity with Are-Level and School-Level Deprivation: Cross-Classified Multilevel Analysis of Cross-Sectional Data. *International Journal of Obesity*, 36(1), 45-52. doi:10.1038/ijo.2011.191

Tudor-Locke, C., & Myers, A. M. (2001). Methodological Considerations for Researchers and Practitioners using Pedometers to Measure Physical (ambulatory) Activity. *Research Quarterly for Exercise & Sport, 72*(1), 1-12.

Tudor-Locke, C., Williams, J. E., Reis, J. P., & Pluto, D., (2004). Utility of pedometers for assessing physical activity. *Sports Medicine, 34, 281-291.* doi.10.2165/00007256-200434050-00001

Tremblay, M. S., Gray, C. E., Akinroye, K. et al. (2014). Physical Activity of Children: A Global Matrix of Grades Comparing 15 Countries. *Journal of Physical Activity and Health,* 11(Supp 1), S113-S125. doi:10.1123/jpah.2014-0177

Trudeau, F., & Shephard, R. J. (2005) Contribution of School Programmes to Physical Activity Levels and Attitudes in Children and Adults. *Sports Medicine,* 35(2), 89–105. doi:10.1177/1559827609351133

Trudeau, F., & Shephard, R. J. (2008). Physical Education, School Physical Activity, School Sports and Academic Performance. *International Journal of Behavioral Nutrition and Physical Activity.* 5(10), 1-12. doi:10.1186/1479-5868-5-10

Trudeau, F., & Shephard, R. J. (2010). Relationships of Physical Activity to Brain Health and the Academic Performances of School Children. *American Journal of Lifestyle Medicine,* 4, 138-150.

Tuckett, A. G. (2005). Applying Thematic Analysis Theory to Practice: A Researcher's Experience. *Contemporary Nurse*, 19, 75-87.

Tveit, M., Rosengren, B. E., Nilsson, J. A., Ahlborg, H. G., & Karlsson, M. K. (2013). Bone Mass Following Physical Activity in Young Years: A Mean 39-Year Prospective Controlled study in Men. *International Osteoporosis Foundation and National Osteoporosis Foundation*, 24, 1389–1397. doi:10.1007/s00198-012-2081-z

Umpierre, D. Ribeiro, P. A. B., Kramer, C. K., et al. (2011). Physical Activity Advice Only or Structured Training and Association With HbA_{1c} Levels in Type 2 Diabetes. A Systematic Review and Meta-Analysis. *Journal American Medical Association*, 305(17), 1790-1799.

Uijtdewilligen, L., Nauta, J., Singh, A. S., van Mechelen, W., Twisk, J. W. R., van der Horst, K., & Chinapaw, M. J. M. (2011). Determinants of Physical Activity and Sedentary Behaviour in Young People: A Review and Quality Synthesis of Prospective studies. *British Journal of Sports Medicine*, 45, 896-905. doi:10.1136/bjsports-2011-090197

Vandermeerschen, H., Vos, S., & Scheerder, J. (2015). Who's Joining the Club? Participation of Socially Vulnerable Children and Adolescents in Club-Organised Sports, Sport, Education and Society, 20(8), 941-958. doi:10.1080/13573322.2013.856293

Van Der Horst, K., Paw, M. J. C. A., Twisk, J. W. R., & Mechelen, W. V. (2007). A Brief Review on Correlates of Physical Activity and Sedentriness in Youth. *Medicine & Science in Sports & Exercise*, 39, 8, 1241-1250. doi.org/10.1249/mss.0b013e318059bf35

Vanhees, L., Lefevre, J., Philippaerts, R., Martens, M., Huygens, W., Troosters, T., & Beunen, G. (2005). How to assess physical activity? How to assess physical fitness? *European Journal Cardiovascular Prevention and Rehabilitation, 12, 102-11*. doi.10.1097/01.hjr.0000161551.73095.9c

Van Coevering, P., Harnack, L., Schmitz, K., Fulton, J. E., Galuska, D. A., & Gao, S. (2005). Feasibility of Using Accelerometers to Measure Physical Activity in Young Adolescents. *Medicine & Science in Sport & Exercise*, 37(5), 867-871. doi:10.1249/01.MSS.0000162694.66799.FE.

Van Mechelen, W., Twisk, J. W., Post, G. B., Snel, J., & Kemper, H. C. (2000). Physical Activity of Young People: The Amsterdam Longitudinal Growth and Health Study. *Medicine & Science Sports Exercise*, 32, 1610–1616.

Van Voorhis, C. R. W., & Morgan, B. L. (2007). Understanding Power and Rules of Thumb for Determining Sample Sizes. *Tutorials in Qualitative Methods for Psychology*, 3(2), 43-50.

Veiga, O. L., Gomez-Martinez, S., Martinez-Gomez, D., Villagra, A., Calle, M. E., Marcos, A., & AFINOS Study Group. (2009). Physical Activity as a Preventative Measure Against Overweight, Obesity, Infections, Allergies and Cardiovascular Disease Risk Factors in Adolescence: AFINOS Study Protocol. *Biological Medical Central Public Health*, 9(475), 1-11. doi:10.1186/1471-2458-9-475

Vella, S. A., Cliff, D. P., & Okely, A. D. (2014). Socio-Ecological Predictors of Participation and Dropout in Organised Sports During Childhood. *International Journal of Behavioral Nutrition and Physical Activity*, 11(62), 1-10.

Vilhjalmsson, R., & Kristjansdottis, G. (2003). Gender Differences in Physical Activity in Older Children and Adolescents: The Central Role of Organized Sport. *Social Science and Medicine, 56, 363-374.*

Voss, C., Dean, P. H., Gardner, R. F., Duncombe, S. L., & Harris, K. C. (2017). Validity and Reliability of the Physical Activity Questionnaire for Children (PAQ-C) and Adolescents (PAQ-A) in Individuals with Congenital Heart Disease. *PLoS ONE,* 12(4), 1-15. doi:10.1371/journal.pone.0175806

Wang, J. C. K., Liu, W. C., Sun, Y., Lim, B. S. C., & Chatzisarantis, N. L. D. (2010). Chinese Students' Motivation in Physical Activity: Goal Profile Analysis Using Nicholl's Achievement Goal Theory. *International Journal of Sport and Exercise Psychology,* 8(3), 284-301. doi:10.1080/1612197X.2010.9671954

Warburton, P., & Woods, J. (1996). Observation of Children's Physical Activity Levels During Primary School Physical Education Lessons. *European Journal of Physical Education, 1, 56-65.* doi:10.1080/1740898960010106

Waring, M., Warburton, P., & Coy, M. (2007). Observation of Children's Physical Activity Levels in Primary School: Is the School an Ideal Setting for Meeting Government Activity Targets. European Physical Education Review. 13, 25–40. doi:10.1177/1356336X07072672

Warnecke, R. B., Johnson, T. P., Chavez, N., Sudman, S., O'Rourke, D. P., Lacey, L., & Horm, J. (1997). Improving Question Wording in Surveys of Culturally Diverse Populations. *Annals of Epidemiology*, 7, 334-342.

Waters, S. K., Lester, L., Wenden, E., & Cross, D. (2012). A Theoretically Grounded Exploration of the Social and Emotional Outcomes of Transition to Secondary School. *Australian Journal of Guidance and Counselling, 22, 2, 190-205.* doi:10.1017/jgc.2012.26

Weir, L. A., Etelson, D., & Brand, D. A. (2006). Parent's Perceptions of Neighbourhood Safety and Children's Physical Activity. *Preventative Medicine, 43, 212-217.* doi:10.1016/j.ypmed.2006.03.024

Weiler, R., Allardyce, S., Whyte, G. P., & Stamatakis, E. (2014). Is the Lack of Physical Activity Strategy for Children Complicit Mass Child Neglect? British Journal Sport Medicine, 48(13), 1010-1012. doi:10.1136/bjsports-2013-093018

Weiss, M. R., Bredemeier, B. J., & Shewchuk, R. M. (1985). An Intrinsic/Extrinsic Motivation Scale for the Youth Sport Setting: A Confirmatory Factor Analysis. *Journal of Sport Psychology*, 7, 75-91.

Wheeler, S. (2011). The Significance of Family Culture for Sports Participation. *International Review for the Sociology of Sport, 47, 235-252.* doi:10.1177/1012690211403196

Wheeler, B. W., Cooper, A. R., Page, A. S., & Jago, R. (2010). Greenspace and Children's Physical Activity: A GPS/GIS Analysis of the PEACH Project. *Preventive Medicine*, 51(2), 148-152. doi: 10.1016/j.ypmed.2010.06.001.

White, R. W. (1959). Motivation reconsidered: The Concept of Competence. *Psychology Review*, 66, 297-333.

Wigfield, A., Eccles, J. S., Mac Iver, D., Reuman, D. A., & Midgley, C. (1991). Transitions During Early Adolescence: Changes in Children's Domain-Specific Self-Perceptions and General Self-Esteem Across the Transition to Junior High

School. *Developmental Psychology, 27,* 552–565. doi:10.1037/0012-1649.27.4.552

Wilson, C. R., & Morgan, B. L. (2007). Understanding the Power and Rules of Thumb for Determining Sample Sizes. *Tutorials in Quantitative Methods for Psychology*, 3(2), 43-50. doi:10.20982/tqmp.03.2.p043

Wood, C., & Hall, K. (2015). Physical Education or Playtime: Which is More Effective at Promoting Physical Activity in Primary School? *Bio Medical Central Research Notes*, 8(12), 1 -5. doi:10.1186/s13104-015-0979-1

World Health Organisation, (2016). Physical Activity Fact Sheet. Retrieved from http://www.who.int/mediacentre/factsheets/fs385/en/

Yao, C. A., & Rhodes, R. E. (2015). Parental Correlates in Child and Adolescent Physical Activity: A Meta Analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 12(10), 1-38. doi:10.1186/s12966-015-0163-y

Yli-Piipari, S. (2014). Physical Education Curriculum Reform in Finland. *National Association for Kinesiology in Higher Education*, 66, 468-484. doi:10.1080/00336297.2014.948688

Young, C. M., Weeks, B. K., & Beck, B. R. (2007). Simple, novel physical activity maintains proximal femur bone mineral density, and improves muscle strength and balance in sedentary, postmenopausal Caucasian women. *Osteoporosis International*, 18(10), 1379-1387. doi:10.1007/s00198-007-0400-6

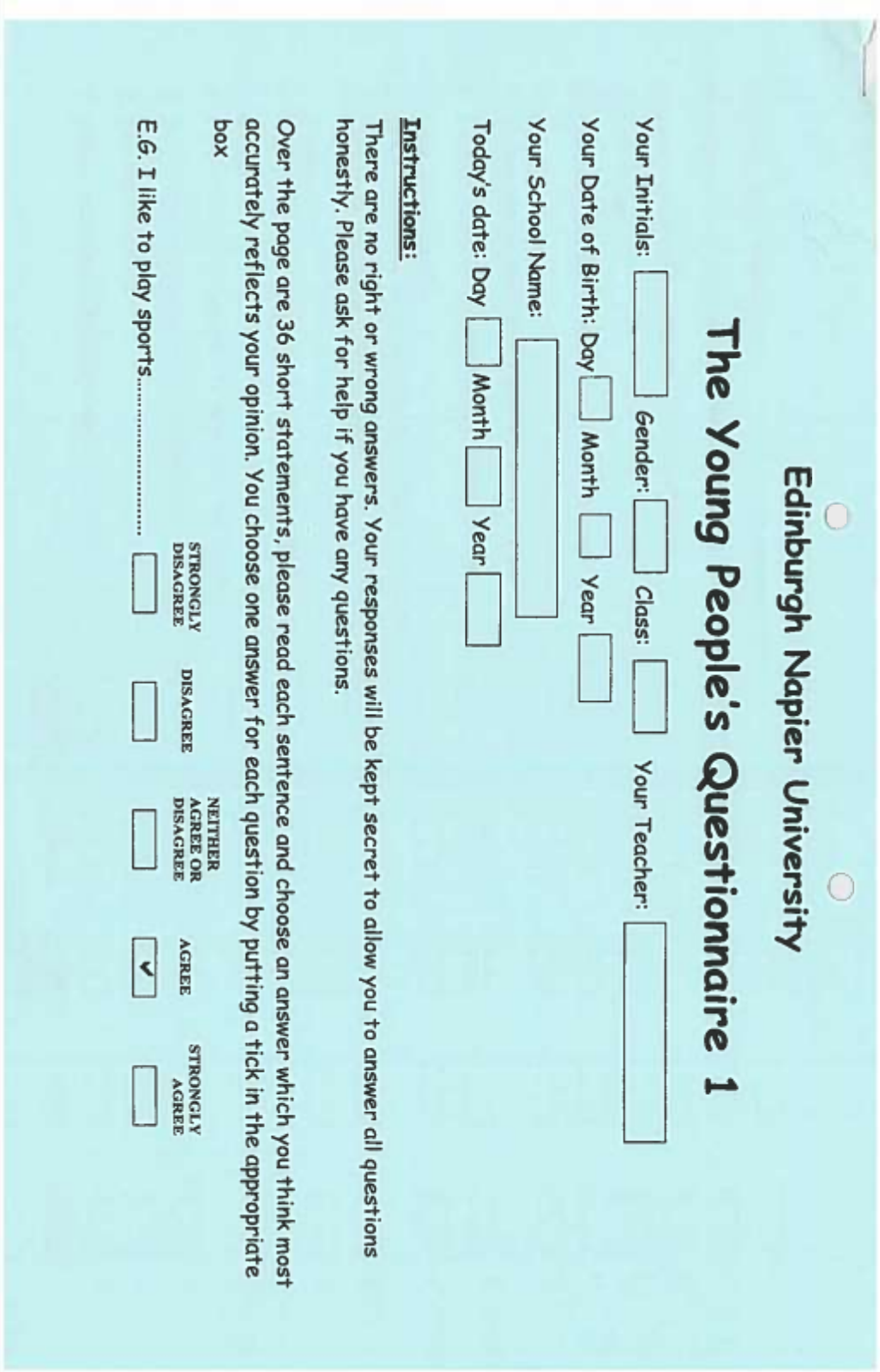
Zask, A., van Beurden, E., Barnett, L., Brooks, L. O., & Dietrich, U. C. (2001). Active Schools' Playgrounds - Myth or Reality? Results of the "Move it Groove it" Project. *Preventive Medicine, 33, 402-408.* doi:10.1006/pmed.2001.0905

Zeedyk, M. S., Gallacher, J., Henderson, M., Hope, G., Husband, B., & Lindsay, K. (2003). Negotiating the Transition from primary to secondarySchool: Perceptions of pupils, parents and teachers. *School Psychology International*, *24*, 67-79. doi:10.1177/0143034303024001010. 3

Appendices

Appendix 3.1

Study One: The Young People's (Club Activity) Questionnaire



Edinburgh Napier University

The Young People's Questionnaire 1

Your Initials: Gender: Class: Your Teacher:

Your Date of Birth: Day Month Year

Your School Name:

Today's date: Day Month Year

Instructions:

There are no right or wrong answers. Your responses will be kept secret to allow you to answer all questions honestly. Please ask for help if you have any questions.

Over the page are 36 short statements, please read each sentence and choose an answer which you think most accurately reflects your opinion. You choose one answer for each question by putting a tick in the appropriate box

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE
E.G. I like to play sports.....				✓	

		STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE	
1. I'm not very good at getting myself to do things	1	☐	☐	☐	☐	☐	1
2. I am good at sports	2	☐	☐	☐	☐	☐	2
3. When I get bored I switch to something else	3	☐	☐	☐	☐	☐	3
4. I can keep going at things even when they are tiring or painful	4	☐	☐	☐	☐	☐	4
5. I feel most successful when I can do better than my friends	5	☐	☐	☐	☐	☐	5
6. I can run a long way without stopping	6	☐	☐	☐	☐	☐	6
7. If something gets to be too much of an effort to do I am likely to stop doing it	7	☐	☐	☐	☐	☐	7
8. I'm good at keeping promises that I make to myself	8	☐	☐	☐	☐	☐	8
9. When I take on something difficult, I try to stick to it until it's finished	9	☐	☐	☐	☐	☐	9
10. I'm good at making decisions and keeping to them	10	☐	☐	☐	☐	☐	1(
11. I am an athlete	11	☐	☐	☐	☐	☐	1
12. I love doing exercise and playing energetic games	12	☐	☐	☐	☐	☐	1:
13. I usually try to find the easiest way to do things	13	☐	☐	☐	☐	☐	1:
14. I don't like to work too hard	14	☐	☐	☐	☐	☐	1·

		STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE	
15. I'm good at throwing a ball	15	☐	☐	☐	☐	☐	15
16. I am a lazy person most of the time	16	☐	☐	☐	☐	☐	16
17. I feel most successful when I learn a new skill by trying hard	17	☐	☐	☐	☐	☐	17
18. I work harder than most of my friends	18	☐	☐	☐	☐	☐	18
19. It takes a lot to get me going	19	☐	☐	☐	☐	☐	19
20. I have good muscles	20	☐	☐	☐	☐	☐	20
21. If PE was optional at school, I wouldn't do it	21	☐	☐	☐	☐	☐	21
22. I really want to achieve things	22	☐	☐	☐	☐	☐	22
23. I don't have much self-discipline	23	☐	☐	☐	☐	☐	23
24. I feel most successful when others mess up and I don't	24	☐	☐	☐	☐	☐	24
25. I don't often let myself down	25	☐	☐	☐	☐	☐	25
26. I like to do things that challenge me	26	☐	☐	☐	☐	☐	26
27. I enjoy sports and games	27	☐	☐	☐	☐	☐	27
28. I change my mind quite easily	28	☐	☐	☐	☐	☐	28
29. Things don't matter much to me	29	☐	☐	☐	☐	☐	29
30. I only really exercise or play games when I am told to	30	☐	☐	☐	☐	☐	30

		STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE	
31. I like to run and play hard	31	☐	☐	☐	☐	☐	31
32. If I was asked to choose between being active and being inactive I would choose to be active, (e.g. play games and do exercise)	32	☐	☐	☐	☐	☐	32
33. I often work until I get tired out	33	☐	☐	☐	☐	☐	33
34. I can run fast	34	☐	☐	☐	☐	☐	34
35. I never force myself to do things that I don't feel like doing	35	☐	☐	☐	☐	☐	35
36. I feel upset if someone stops me being physically active and playing games	36	☐	☐	☐	☐	☐	36
37. If I could choose what to do, I would choose to run around or play games	37	☐	☐	☐	☐	☐	37
38. My parents/guardians don't really need to encourage me to exercise, I just do it because I enjoy it	38	☐	☐	☐	☐	☐	38
39. I feel most successful when something I learn makes me want to go and practice more	39	☐	☐	☐	☐	☐	39
40. I exercise and play games because I like to rather than because I feel I have to	40	☐	☐	☐	☐	☐	40

Edinburgh Napier University

The Young People's Questionnaire 2

Instructions:

This questionnaire is about the sports and physical activities you do both at school and outwith school.

There are no right or wrong answers. Your responses will be kept secret to allow you to answer all questions honestly. There are two sections with ten questions in total. Please note that Section A is about SCHOOL sports only and Section B is about NON SCHOOL sports only.

Please ask for help if you have any questions

Your Initials: ____ Gender: ____ Class: ____ Teacher: ____

Your Date of Birth: Day ____ Month ____ Year ____

Today's date: Day ____ Month ____ Year ____

Section A - School Clubs/Sessions (organised by your school)

This section of the questionnaire is about sport and physical activity clubs/sessions that take place **at your school only**. Do not include non-school clubs or PE lessons that take place during your normal school days.

A1. At the moment, how many school sport or physical activity clubs/sessions do you go to at least one time per week?

- No clubs..... ☐
- One club..... ☐
- Two clubs..... ☐
- Three clubs..... ☐
- More than 3..... ☐

A2. What are the school sport or physical activity clubs/sessions you go to and on what day(s) do they take place?

	Type of Sport or Physical Activity (e.g., Tennis)	Day(s) (e.g., Wednesday & Friday)
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____

B4. Since the beginning of last academic year (August 2009), have you gone to a sport or physical activity club/session (NOT school clubs) that you then stopped going to?

Yes ☐ No ☐

B5. If you have stopped going to a club/session (NOT school clubs) please name the club and tick the MAIN reason why you stopped going.

NAME OF SPORTS OR PHYSICAL ACTIVITIES

Write name of club here →	1. _____	2. _____	3. _____
	Tick one box	Tick one box	Tick one box
Bored	☐	☐	☐
Too hard	☐	☐	☐
Friends didn't go	☐	☐	☐
Club stopped	☐	☐	☐
It was a bad time of day	☐	☐	☐
Injured/ill	☐	☐	☐
I couldn't get home	☐	☐	☐
Too much homework	☐	☐	☐
Other (please write in space)	_____	_____	_____

B6. Do you regularly attend any other clubs or sessions outside school (but NOT organized by school) where you take part in sport or physical activity?

	Yes	No
Girls Brigade/ Boys Brigade	☐	☐
Guides/Scouts	☐	☐
Brownies/ Cubs	☐	☐
Church club or religious club	☐	☐
Youth club or religious club	☐	☐
Youth club where you regularly do sport or physical activity	☐	☐

Other club where you regularly do sport or physical activity (Please name). _____

Appendix 3.2

Faculty of Health, Life and Social Sciences Research

Parental Consent

Project title: Understanding the Motivation for Physical Activity Participation in Children

Principal investigator: Steven Young

Research Team:

Dr Russell Martindale – Napier University
Dr Christine Nash – Napier University
Mr Steven Young – Napier University

Date: November 2010

Dear Parent,
I am currently a research student at Edinburgh Napier University. My research is concerned with children's participation levels in sport and exercise. Your child participating in this study will contribute towards identifying some key areas behind children's motivation in taking part in sport and exercise. What is required of your child?

Your child will be asked to complete three short questionnaires (listed below) which will be handed out and supervised by teaching staff:

1. The Young People's Questionnaire 1 (36 short questions)
2. The Young People's Questionnaire 2 (10 short questions in 2 sections)
3. The Young People's Questionnaire 3 (10 short questions)

All three questionnaires are designed specifically for children, and have been scientifically validated and used extensively before in school settings.

Confidentiality
All the information provided by the children will remain confidential. The children will only be asked to write their initials on the questionnaires in order for the researchers to link questionnaires 1, 2 and 3 together for analysis purposes. This confidentiality is to encourage the children to feel comfortable to answer honestly. All researchers are

University staff and are bound by the strong ethical guidelines. A report of the findings will be provided to the school and may be used for future publication in the hope that it can help encourage active lifestyles in our children. However, only average group results will be reported, and there is no possibility that your child could be identified in any way. If you have further questions, please contact the principal investigator (details below) or your child's head teacher.

Consent

This research has been fully encouraged and endorsed by your child's school. Please contact your child's head teacher if you have any questions or objectives to your child taking part. If we receive no response from you by Monday 4th October 2010 we will assume that you have read and understand the above and agree to the below statements:

- I have read and understood the information in this letter.
- I understand what the project is about and what the results will be used for.
- I am fully aware of all of the procedures my child will be involved in.
- I understand that the results of the project may be published but that my child's name or identity will not be revealed.
- I know that my child's participation is voluntary and that they can withdraw from the project at any stage without giving any reason.
- I am aware that my child's results will be kept confidential.
- I am aware that I can see any of the materials used in this study at any time, and/or speak to the researcher and/or head teacher about it on request.

Thank you for your time.

Principal investigator:
Steven Young
Tel : 0131 650 9790
s.young@napier.ac.uk

Appendix 5.1

Faculty of Health, Life and Social Sciences Research Consent Form

Project: An Investigation into the Nature of Physical Activity in Young People Within a Scottish Context

Research team: Steven Young, Dr R. Martindale, Dr C. Nash and Dr M. Winterton

Outline purpose for interview. I am currently a PhD student and member of staff at Edinburgh Napier University. My research interest is concerned with motivational behaviour and participation in physical activity. To further enhance my research, I intend to carry out a number of interviews with adults using a qualitative, grounded theory approach.

Protocol. Details from the interview will be recorded on to a Dictaphone (IPhone voice memo) and coded by stating time and date only at the beginning of the interview.

The recording from the Dictaphone will be transcribed and transferred (confidentially) to a word document and analysed to establish trends and other pertinent information related only to this study.

Details of transcriptions are to be discussed only by the appointed research team (Steven Young, Dr Russell Martindale, Dr Christine Nash and Dr Mandy Winterton).

The information collected from this interview will be completely confidential and will available to the interviewee at any time.

You, the interviewee, can withdraw from this study at any time.

Consent to participate in the above study:

I understand that I am under no obligation to take part in this study.

I understand that I have the right to withdraw from this study at any stage without giving any reason.

I agree to participate in this study.

I have read and understood the information sheet and this consent form. I have had an opportunity to ask questions about my participation

Name of participant: _____
Signature of participant: _____
Signature of researcher: _____
Date: _____

Contact details of the research team:

Steven Young
S.Young@napier.ac.uk
Tel: 07971588945

Dr Russell Martindale
R.Martindale@napier.ac.uk
Tel: 0131 4552625

Dr. Mandy Winterton
M.winterton@napier.ac.uk
Tel: 0131 651 6581

Appendix 5.2

Faculty of Health, Life and Social Sciences Research Ethics and Governance Committee

Participant/Parent Information

Research Team:
Steven Young, Dr R. Martindale, Dr C. Nash and Dr M. Winterton
My name is Steven Young and I am a Ph.D. student from the School of Life, Sport & Social Sciences at Edinburgh Napier University. As part of my Ph.D., I am undertaking a research project.

The title of my project is: An Investigation into the Nature of Physical Activity in Young People Within a Scottish Context

This study will investigate individual physical activity levels, types of activities, reasons for starting physical activity and also reasons for continuance, non-adherence and drop out from activities altogether. This is to be achieved by asking participants about their physical activity during childhood, adolescence and as young adults during school hours and after school and which will include asking questions linked to physical activity with friends and family.

The findings of the project will be useful/valuable in providing a better understanding into why people choose to disengage (drop-out altogether) from being physically active, and will contribute towards the prevention of serious diseases such as Type 2 Diabetes.

I am looking for volunteers to participate in the project aged 16 – 20 years. Other than age, there are no criteria (e.g. gender, or health) for being included or excluded – everyone is welcome to take part.

If you (your son/daughter) agree to participate in the study, you (your son/daughter) will be asked to take part in a one-to-one interview. The interview will be conducted in place where you (your son/daughter) feel completely comfortable and able to discuss aspects of your personal life related to physical activity.

The researcher is not aware of any risks associated with this study. The whole procedure should take no longer than 60-minutes. You (your son/daughter) will be free to withdraw from the study at any stage, you would not have to give a reason, and it

will not affect your treatment. This project will also mean that I will have to look at aspects of your personal life including parent's occupations and postcodes

All data will be anonymised as much as possible, but you may be identifiable from tape recordings of your voice. Your (your son/daughter) name will be replaced with a participant number or a pseudonym, and it will not be possible for you to be identified in any reporting of the data gathered. Any data collected will be kept in a secure place to which only the research team access. These will be kept until the end of the examination process.

The results may be published in a journal or presented at a conference. If you would like to contact an independent person, who knows about this project but is not involved in it, you are welcome to contact Dr Barbara Neades. Her contact details are given below.

If you have read and understood this information sheet, any questions you had have been answered, and you would like to be a participant in the study, please now see the consent form.

Contact details of the researcher:

Name of researcher: Steven Young

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN

Email / Telephone: s.young@napier.ac.uk / 0131 455 2628

Contact details of the independent adviser:

Name of adviser: Dr Barbara Neades

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN

Email / Telephone: B.Neades@napier.ac.uk 0131 455 6041

Appendix 5.3a

Study two: The initial interview schedule used for pilot study

Main Question	Prompt	Probes
What is your address and postcode? What is your DOB? What are your parent's occupations? Current? Previous (whilst you were at school) Do you live with your parents? What address and post code of parents when you were at school? (**Retrospective**)		
Starting from approximately age 10, can you outline what sports/physical exercise/physical activities you participated in? **(Retrospective)** (complete time scale)	▪ School sports/activities/exercise ▪ Out of school sports/activities/exercise ▪ Informal sport/activity e.g. playground/AstroTurf/street/park/ garden/ in the house/friend's house, garden	Rugby/football/cricket/rounder's/swimming/ballet/dance/hockey/judo. PE/games/playing/skateboarding/skiing/cycling/dancing/hide and seek/tag/
How long and how often did you do each of these sports? **(Retrospective)**	▪ Frequency ▪ Duration per session(s) ▪ How many years	Weekly/monthly Mins per session (30+/20/10min) How many sessions per day
Why did you start each activity? **(Retrospective)**	• IM/EM • SDT • Goal orientation • Technology • Spectator • External influence	Were there any outside influences Friends TV/games Watching others Sports event From playing in the garden/indoors or elsewhere Peers/parents/coach/teacher
Why did you keep doing the activity for that amount of time? **(Retrospective)**	• IM/EM • SDT • Goal Orientation • Challenges/coping skills/problem solving • Support	Feel good factor Rewards/trophies Guilt Coerced by parent, coach, teacher, sibling peer group Health and fitness Other external influences Positive/negative response to

		challenge
Why did you stop the activity? **(Retrospective)**	• IM/EM • SDT-CET • Goal orientation • Barriers/challenges/coping skills/problem solving • Support (or lack of) • Injury • Financial	Interest Peer group/friends/teacher/coach/parent School work Different activity Time Problems with e.g. coach TV/games or other
At any stage, were there any sports/exercise/ activities you wanted to do but didn't /couldn't? **(Retrospective)**	• Barriers • Inability to overcome problems or problem solve • Influences • Financial	Parents/teacher/parent Other activities School Perceived competence Autonomy support-choice Relatedness
What do you think the differences are between those who are active and those who are inactive – through childhood into adolescence and then into adulthood?	• Personal characteristics • Support • Environmental • Opportunities • Financial • Resources • SDT/CET	TV/games Other distractions Parent/teacher/coach/peer group Outdoor facilities-parks/astro/playground Funds for equipment clothing etc Indoor hall for gym/sports/activities/play/etc Competence/ability Choice

Appendix 5.3b

Study two: Developed (from pilot study) interview schedule

Hello. My name is Steven Young. Thank you for agreeing to take part in this interview, which is concerned with Scottish youth's participation in physical activity. The information you provide will be treated with complete confidentiality and as such will only be available to the research team. If, at any time during the interview you want to stop just let me know.

Me - Define physical activity (e.g., sport/exercise/play)

Do you consider yourself to be high or low physically active?

Q1. Please take the time and think back to when you were at primary school. Can you tell me about your experiences with physical activity?

a) Can you tell me what physical activities you participated in during primary school?
b) Moving from primary into secondary school can you tell me which physical activities you were involved in?
c) Moving from age 15 to 16 which activities were you involved in?

Q2. Tell me about any activities you participated in which you might not consider to be physically active?

Q3. Which of the activities mentioned are you still participating in now and why?

Q4. Can you tell me why you started each activity?

Q5. Why did you stop participating in the other activities?

Q6. At any time during school or growing up, were there any activities you wanted to do but didn't or just couldn't?

Q7. Was there anything or anyone that influenced you to participate in activities you mentioned?

Q8. Was there anything or anyone that:

a) Prevented you taking part/trying out an activity?
b) Caused you to dropout from participating altogether?

Q9. Looking back, are there any other events or occurrences that may have influenced your views/decisions towards taking part in physical activity?

Q10. Thinking about childhood then into adolescence and then into adulthood, what do you think the differences are between those who are active and those who are inactive?

Q11. What do you think can be done to influence/encourage more kids to be physically active?

Q12. Are you currently involved in any physical activity? (this could be organised sport/exercise or walking/running/cycling etc).

a) If yes, which activities, how much and why?
b) If no, can you explain why you choose not to?

Q13. Do you have any ideas or suggestions that might help my understanding why people?

a) Take part in physical activity?
b) Choose not to take part?
c) Have taken part but have dropped out all together?
d)

Q14. From your own experiences do you have any suggestions or opinions, which might help encourage children to take part in physical activity?

Q15. Is there anything else you think I should know about Youths participation in Physical activity?

Q16. Do you have any questions or do you have any comments concerning this interview?

Appendix 5.4

The Percentage of participants (Both = Males & Females; Males; Females) Physical Activities Throughout the Key Stages

Category	Type of PA	Childhood			Adolescence			Early Adult			Throughout Stages		
		Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female
Active Travel	AT-1	84	67	100	73	78	67	84	89	78	62	67	56
	AT-2	67	67	67	67	45	89	78	67	89	78	67	89
Active Play	AP-1	100	100	100	0	0	0	0	0	0	0	0	0
	AP-2	89	78	100	67	78	56	17	33	0	17	33	0
Sports	VSA	78	78	78	45	34	56	50	44	56	33	22	44
	IMS	50	67	33	45	56	33	45	56	33	45	56	33

Notes. *Notes.* PE = Physical Education (schools curriculum based); IMS = Identifies with Main Sport (identifies with a main activity normally sport including dancing); VSA = Various Structured Activities (Diverse participation in organised sports (e.g. football, basketball, dancing or other structured (e.g. structured exercise) or organised non sports (e.g. cubs and brownies; structured exercise) during out-of-school; AT-1 = Active Travel-1 (walking to and from school); AT-2 = Active Travel-2 (walking out-of-school e.g., local neighbourhood - to the shops, with friends, family, dog walking etc); AP-1 = Active Play-1 (in-school non structured activities during breaktimes); AP-2 = Active Play-2 (out-of-school non structured activities; hanging around or/and playing with friends at e.g., the back garden, local park, AstroTurf, local streets, fields or other); Both = Males & Females; All participants % is calculated based on total participants = 18 (Both)
Male and female % is calculated based on gender total (i.e., Males = 9 and Females = 9)

Appendix 5.5

Study 2: Pupils Participation in Different Types of Physical Activity Throughout the Key Stages

Participant	Childhood	Adolescence	Early Adult	PA Throughout all Stages into Early Adult
MP1	PE; AT-1; AP-1: VSA; AT-2; AP-2	PE; AT-1; VSA; AT-2; AP-2	AT-1; AT-2; AP-2	AT-1; AT-2; AP-2
FP2	PE; AT-1; AP-1; VSA; AT-2; AP-2	PE; AT-1; VSA; AT-2; AP-2	AT-1; AT-2; VSA	AT-1; AT-2; VSA
FP3	PE; AT-1; AP-1; VSA; AT-2; AP-2	PE; AT-1; VSA; AT-2; AP-2	SRS; AT-1; AT-2; VSA	AT-1; AT-2; VSA
MP4	PE; AT-1; AP-1; VSA; IMS	PE; AT-1; IMS; VSA	IMS; AT-1; AT-2; VSA	AT-1; VSA; IMS (Football)
FP5	PE; AT-1; AP-1; VSA; AT-2; AP-2	PE; AT-2	AT-2	AT-2
FP6	PE; AT-1; AP-1; AT-2; AP-2; IMS	PE; IMS; VSA; AT-2	IMS; AT-1; AT-2	AT-2; IMS (Dancing)
FP7	PE; AT-1; AP-1; AT-2; VSA; AP-2	PE; AT-1; AT-2; AP-2; VSA	VSA; AT-1; AT-2	AT-1; AT-2; VSA
FP8	PE; IMS; AT-1; AP-1; AT-2; AP-2	PE; AT-1; AT-2; AP-2; IMS; VSA	AT-1; VSA; IMS; AT-2	AT-1; AT-2; IMS (Dancing)
MP9	PE; AT-1; AP-1; AP-2; VSA; IMS	PE; IMS; AT-1; AP-2	VSA; IMS; AT-1; AP-2	AT-1; AP-2; IMS (Football)
FP10	PE; AT-1; AP-1; AP-2; VSA; IMS	PE; IMS; AT-1	VSA; AT-1; IMS	AT-1; IMS (Dancing)
FP11	PE; AT-1; AP-1; AP-2; VSA	PE; AT-1; AT-2	SRS; AT-1; AT-2	AT-1
FP12	PE; AT-1; AP-1; AP-2; VSA	PE; AT-2; AP-2	AT-2	
MP13	PE; AP-1; AT-1; AP-2; AT-2; VSA	PE; AT-1; AT-2; AP-2	AT-1; AT-2	AT-1; AT-2
MP14	PE; AP-1; AT-2; AP-2	PE; AT-2	AT-2	AT-2
MP15	PE; AT-1; AP-1; AT-2; AP-2; IMS	PE; AP-2; AT-1; AT-2; IMS	IMS; AT-1; AT-2	AT-1; AT-2; IMS (football)
MP16	PE; AP-1; AP-2; AT-2; VSA; IMS;	PE; VSA; IMS; AP-2;	AT-1; AT-2; AP-2; IMS; VSA;	AP-2; IMS (Football); VSA
MP17	PE; AT-1; AP-1; AP-2; IMS; VSA; AT-2	PE; AT-1; AP-2	AT-1	AT-1
MP18	PE; AP-1; VSA; IMS;	PE; AT-1; AP-2; IMS	SRS; AT-1; IMS; VSA;	- IMS (Football)

Notes. PE = Physical Education (schools curriculum based); IMS = Identifies with Main Sport (identifies with a main activity normally sport including dancing); VSA = Various Structured Activities (Diverse participation in organised sports (e.g. football, basketball, dancing or other structured (e.g. structured exercise) or organised non sports (e.g. cubs and brownies; structured exercise) during out-of-school; AT-1 = Active Travel-1 (walking to and from school); AT-2 = Active Travel-2 (walking out-of-school e.g., local neighbourhood - to the shops, with friends, family, dog walking etc); AP-1 = Active Play-1 (in-school non structured activities during breaktimes); AP-2 = Active Play-2 (out-of-school non structured activities; hanging around or/and playing with friends at e.g., the back garden, local park, AstroTurf, local streets, fields or other)

Appendix 6.1

Play is central to developing the skills, capabilities and attributes in young children and there are times where interventions need to be put in place to support play within communities.

Continual investment in physical education as the platform to develop and improve physical competence, cognitive skills, fitness and personal qualities required to succeed in sport.

Provision of career long professional learning opportunities to support teachers facilitate quality learning experiences in physical education that provide young people with the confidence, skills, capabilities and attributes for life-long participation.

Recognise the crucial role physical education plays in inspiring and developing future elite performers, as well as a life-long involvement with physical activity and sport.

Continually review the content of physical education to ensure the best possible experiences for children and young people.

Celebrate cohesive school communities that embrace a PEPAS model supporting and developing participation and sports performance. PEPAS can be centred on a cluster model with leadership from the secondary PE department linked closely to its associated primaries and PAS partners. The secondary department ensures that school sport is central to the development of young people and talented young athletes.

Ensure extended and sustained opportunities at the base of the participation pyramid. One-off footfall figures (Active Schools and extra-curricular clubs) provide some evidence, but there is concern that it has limited impact in terms of sustainable participation.

Expand the volunteer support base, with an emphasis on quality of opportunities. Strengthen the links between schools and community clubs, recognising the importance of quality coaching and teaching to performance development. Ensure that coach-teacher development is seen across a range of practices and formats and not simply formal qualifications.

Carry out a robust evaluation of the impact of the active schools' programme – has the provision of opportunities for children and young people to participate in sport before, during and after school led to sustained level of participation beyond the school years? Are there a variety of models which better meets the needs of each community and school or perhaps cluster of schools that could in turn use the similar level of resourcing in a much more creative and flexible way to bring about better outcomes? (p.8)

Figure 1.1 Curriculum for Excellence Scotland, Physical Education, Physical Activity and Sport (PEPAS) by Scottish Government (2015): Retrieved form https://www.educationscotland.gov.uk/Images/all_experiences_outcomes_tcm4-539562.pdf

Appendix 6.2

Faculty of Health, Life and Social Sciences Research Ethics and Governance Committee
Study Information

Research Team: Steven Young, Dr R. Martindale, Dr C. Nash and Dr M. Winterton

My name is Steven Young and I am a Ph.D. student from the School of Life, Sport & Social Sciences at Edinburgh Napier University. As part of my Ph.D., I am undertaking a research project. The title of my project is: An Investigation into the Nature of Physical Activity in Young People Within a Scottish Context

This study will investigate individual physical activity levels, types of activities, reasons for starting physical activity and also reasons for continuance, non-adherence and drop out from activities altogether. The questions areas focus on understanding children's MVPA across time, their PE experiences, and also the experiences/characteristics that help or hinder participation across different groups (e.g. gender, SES, age).

The findings of the project will be useful/valuable in providing a better understanding into why people choose to disengage (drop-out altogether) from being physically active, and will contribute towards the prevention of serious diseases such as Type 2 Diabetes.

Through a purposive sample approach, I am looking for volunteer physical education teachers currently involved in the Scottish curriculum. Other than this, there are no criteria (e.g. gender, or health) for being included or excluded.
If you agree to participate in the study, you will be asked to take part in a one-to-one interview. The interview will be conducted in place where you feel completely comfortable and able to discuss aspects of your personal life related to physical activity.

The researcher is not aware of any risks associated with this study. The whole procedure should take no longer than 60 minutes. You will be free to withdraw from the study at any stage, you would not have to give a reason, and it will not affect your treatment.

All of the data will be anonymised as much as possible, but you may be identifiable from digital recordings of your voice. Your name will be replaced with a participant number or a pseudonym, and it will not be possible for you to be identified in any reporting of the data gathered. Any data collected will be kept in a secure place to which only the research team access. These will be kept until the end of the examination process.
The results may be published in a journal or presented at a conference.
If you would like to contact an independent person, who knows about this project but is not involved in it, you are welcome to contact Dr Barbara Neades. Her contact details are given below.

If you have read and understood this information sheet, any questions you had have been answered, and you would like to be a participant in the study, please now see the consent form.

Contact details of the researcher

Name of researcher: Steven Young

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Email / Telephone: s.young@napier.ac.uk / 0131 455 2628

Contact details of the independent adviser

Name of adviser: Dr Barbara Neades

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Email / Telephone: B.Neades@napier.ac.uk 0131 455 6041

Appendix 6.3

Faculty of Health, Life and Social Sciences Research Ethics and Governance Committee
Consent Form:

Project: An Investigation into the Nature of Physical Activity in Young People Within a Scottish Context

Research team: Steven Young, Dr R. Martindale, Dr C. Nash and Dr M. Winterton

Consent to participate in the above study:
I understand that I am under no obligation to take part in this study.
I understand that I have the right to withdraw from this study at any stage without giving any reason.

I agree to participate in this study.

I have read and understood the information sheet and this consent form. I have had an opportunity to ask questions about my participation

Name of participant: _____
Signature of participant: _____
Signature of researcher: _____
Date: _____

Contact details of the research team:

Contact details of the researcher:

Name of researcher: Steven Young

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Email / Telephone: s.young@napier.ac.uk / 0131 455 2628

Contact details of the independent adviser:

Name of adviser: Dr Barbara Neades

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Email / Telephone: B.Neades@napier.ac.uk 0131 455 6041

Faculty of Health, Life and Social Sciences Research Ethics and Governance Committee
Consent Form
i

Project:

Research team: Steven Young, Dr Russell Martindale, Dr Christine Nash & Dr M Winterton

In line with Economic and Social Research Council practice, the above researchers are committed to ethical data re-use. This means, with your consent, your interview data could be used in other studies conducted by either Steven Young or Dr Martindale. The studies must be related motivation and physical activity at Edinburgh Napier University. No other researchers will ever have access to or use of your data, only Steven Young and or Dr R. Martindale. It will also be destroyed at any time at your request.

Consent to re-use of data understand that I am under no obligation to agree to my data being re-used.

I understand that I have the right to withdraw consent to my being data re-used at any time without giving any reason.

I agree to my data being used by Steven Young and/or Dr Martindale in other transitions conducted at Edinburgh Napier University.

I have read and understood the information sheet, the consent form regarding research participation, and this consent form regarding data re-use. I have had an opportunity to ask questions about the re-use of my data.

Name of participant: _____
Signature of participant: _____
Signature of researcher: _____
Date: _____

Contact details of the researcher:
Name of researcher: Steven Young
Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Email / Telephone: s.young@napier.ac.uk / 0131 455 2628

Contact details of the independent adviser:
Name of adviser: Dr Barbara Neades

Address: Edinburgh Napier University
Sighthill Campus
Edinburgh
EH11 4BN
Email / Telephone: B.Neades@napier.ac.uk 0131 455 6041

Appendix 6.4

Study Three Interview Questions

Q1. primary question:

Could you outline your current role and any other relevant experience you have had in connection with young people's physical activity (both in and out-of-school)?

MVPA

Q2. primary question:

From your own experience what are your thoughts on young people's MVPA - starting from childhood (in primary school) through adolescence (secondary school) and into young adulthood?

Secondary questions:

Can you describe the types of activities youngsters participate in that contribute towards MVPA in and out-of-school?

Can you describe why sport is an important contribution towards MVPA (in and out-of-school)?

In your experience can you explain the differences between boys and girl's attitudes and behaviours towards participating in any MVPA in and out-of school?

In addition, can you describe whether SES affects youngster's attitudes and behaviours towards MVPA (participation)?

Transitions

Q3. primary question:

Can you describe the impact transition periods can have on youngsters participation in PA (probes e.g., primary to secondary and adolescence to adulthood (during S5 onwards aged 16+)?

Secondary questions:

Thinking about transitions, can you describe the reasons behind why some pupils have an easy transition and others seem to have an uneasy transition (both transitions)?

Can you describe whether pupils' SES have an impact on their transition from primary to secondary school?

Can you explain why pupils seem to have less or more problems engaging in school PE during S5 & S6 (aged 16+)?

School PE

Q4. Primary question:

Can you explain the purpose or and aims of PE during firstly primary school and then secondary school?

Secondary questions:

Can you explain/describe?

1. The types of PA pupils participate in during PE (probe: mostly sport, team games, other structured, any unstructured activities).
2. Why these types of activities during PE are important.
3. How is PE typically delivered (probes: do pupils have a choice of activities, do boys and girls participate separately or together, are activities mainly teacher led)?
4. Can you explain why you think PE is important towards contributing to MVPA (probes: acquiring skills (which skills) sports participation (which sports and why, social (making friends), team building or other?

Q5. Primary questions:
Can you explain why you think some pupils really take to school PE and why others seem to have problems?

Q6. Primary question:

Can you describe why some pupils choose to avoid participating in school PE?

Q7. Primary question:

Can you explain the approaches that are currently used to help improve pupil's engagement in school PE (primarily by e.g., those youngsters experiencing uneasy transitions during secondary)?

Q7. Primary question:
What do think are the differences (characteristics) between those youngsters that regularly engage in PE, sports and other structured PA, and those that do not (in school and out-of-school)?

Policy:
Q8. Primary question:
Can you describe how currently policy is used to improve youngster's participation in all types of PA along with how this contributes towards participation in MVPA?
Can you explain/describe how you think policy might be improved to help with (1) pupils' engagement in curriculum PE, and (2) improved levels of MVPA?

Do you have anything to add that might contribute to my investigation into young people's PA?

Appendix 6.5

Table 6.3

Categorisations and Themes Generated From Initial Coding

Categorisations	Theme 2
Sport in PE Facilitates or Debilitates Participation	The Nature of Sport and MVPA in Secondary School PE
Facilities and Teachers Influence PE to be Sport Orientated	
PE Struggles as a Provider of MVPA	
MVPA is Mostly Linked to Sport Only	

Categorisation (code)	Raw data (participant quotes)
PE Struggles as a Provider of MVPA	Sam: It's very difficult for PE, as a subject, to deal with the pressure of MVPA guidelines and expectations
	Lesley: The Government's policy of two hours PE per week is not going to solve the problems of young people not participating in enough physical activity
	Brian: There is this physical activity drive in the world of PE (and in Scotland) and Teachers in PE are being measured on having children achieve physical activity guidelines.
	David: If you put a number on it [MVPA guidelines] it is almost a moral guilt trip… a number on this sort of thing suggest to people [teachers, parents and youngsters] that this is what they must do at all costs which, doesn't work for all youngsters anyway.
	Ben: There is just not enough time in the PE session to achieve sufficient MVPA
	Ben: There is just not enough time in the PE session to achieve sufficient MVPA.
	Lesley: Schools don't have the timetable to achieve MVPA we only have two hours per week.