

**Mind the gap: exploring the decline in
physical activity at the transition stage of
adolescence in Glasgow youth**

by

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STUDENT DECLARATION FORM

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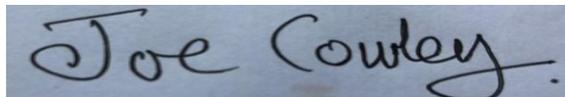
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Abstract

This thesis aimed to investigate physical education, physical activity and sport (PEPAS) participation and the adoption of health behaviours in Scottish adolescents. To address this topic, I start with a general reflection on the current state of Scottish health, through the lens of the Scottish and nested Glasgow effects. Subsequently, building on this conceptual base, I outline a series of three studies to further investigate the linkages between PEPAS and accumulating life stress and health behaviours.

Accordingly, the thesis narrative consists of 4 distinct research outputs (1 desktop study, followed by 3 studies involving the collection of primary data). These studies were arranged as follows:

In Chapter 4 (research study 1), I suggest that a confluence of social, environmental, attitudinal and cultural stressors may combine to negatively influence biological health. The core conclusion of this conceptual paper was that PA may provide a highly efficient, and cost-effective means to remediating some of the issues underpinning the Scottish effect.

Chapter 5 (research study 2) presents data comparing patterns of PA uptake in adolescents of low socioeconomic status (SES) backgrounds with more affluent age-matched peers. SES is a significant biopsychosocial stress-elevating consideration. These findings add to mounting evidence suggesting excessively accumulating life stress, not only diminishes health, but simultaneously reduces PA uptake in vulnerable populations. The outcomes of this study thus emphasise the negative relationship between excessive life stress and PA, and highlight that there may be a bidirectional relationship between these factors.

Chapter 7 (research study 3) qualitatively investigates the barriers and facilitators of PEPAS and exercise in the broad general education (BGE) phase of CfE in Scotland. Focus groups were conducted with 39 secondary school pupils (S1-S2). This study adds context-specific information highlighting the role of self-image, perceived competence and social influence on PEPAS participation. Subsequent

findings indicated that the delivery of traditional PE lessons, which prioritise sporting ability, act as a participation barrier to pupils who consider themselves ‘non-sporty’.

Chapter 8 (research study 4) builds on Chapter 7 by qualitatively investigating why young people in the post 16 phase of CfE discontinue participation in exercise, sport and PA, whilst analysing reasons for this post compulsory education decline in PA. Previous negative PE experiences were perceived as a major barrier to continued PA. Furthermore, this young cohort perceived that PE teachers focused primarily on physically capable students. Respondents also perceived that access to contemporary fitness activities would be a positive option both during PE lessons, and as a tool to promote lifelong PA. Key conclusions emanating from this thesis included:

- PA levels were significantly lower in those who had experienced greater accumulated life stress. Thereby suggesting that excessively accumulating life stress not only exerts a negative effect on health, but simultaneously reduces PA uptake in vulnerable populations.
- Activities where individuals felt singled out, such as fitness testing, present significant barriers to PEPAS. Similarly, an overly competitive, performance-based curriculum acted as a barrier for those who self-identified as ‘non-sporty’.
- Many 16-18-year-olds see current cultural fitness trends as preferable to the range of activities traditionally promoted within PE.
- It was perceived that previous negative PE experiences acted as a barrier to continued PA into adulthood.

A core finding arising from this thesis is the recommendation that promoting lifelong PA habits, particularly in those at risk of elevated life stress, should be a fundamental objective of educators. Furthermore, evidence uncovered during this thesis suggests that PE should be structured around pedagogical models promoting self-efficacy and intrinsic motivation. Also, it is suggested that, during the senior phase, PE should be repackaged into an attractive compulsory brand. Finally, the implementation of current fitness and exercise trends, may prove an effective strategy in promoting lifelong activity and health and wellbeing.

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Lastly, an extended thanks to my family: my mother, brother, and my wife Dawn for putting up with me during this study period.

I dedicate this thesis to the memory of my late father, Joseph Cowley.

Academic publications

The following academic publications have arisen from this thesis. More detail on dissemination is given in Chapter 11.

- Cowley, J., Kiely, J., and Collins, D. (2017) What makes young people tick? A qualitative analysis of the beliefs and perceptions of school aged children towards PE and healthy living in 'the sickest area of Europe'. *International Journal of Adolescent Medicine and Health*. <https://doi.org/10.1515/ijamh-2017-0050>. [Epub ahead of print]
- Cowley, J., Kiely, J., and Collins, D. (2017). Is there a link between self-perceived stress and physical activity levels in Scottish adolescents? *International Journal of Adolescent Medicine and Health*. <https://doi:10.1515/ijamh-2016-0104>. [Epub ahead of print]
- Cowley, J.G., Kiely, J and Collins, D. (2016) Unravelling the Glasgow effect: The relationship between accumulative biopsychosocial stress, stress reactivity and Scotland's health problems. *Preventive Medicine Reports*. 4:370-375
<https://www.ncbi.nlm.nih.gov/pubmed/27512652#>

Terminology and definition of the main terms

Terminology and aims of this section

To establish the correct terminology used in this thesis, the Scottish physical education advisory group (PEPAS excellence group) have produced a series of definitions which covers the terminology that should be used stating:

There remains some confusion and ambiguity between the 3 distinct areas that make up physical education, physical activity and sport. It is therefore important to make clear the differences and define each.

The extract contained in table 1 below, outlines the distinctions between these areas.

However, for the use of this thesis, I use their term PEPAS (physical education, physical activity and sport). Whilst it is important to understand the distinction between each, when analysing the literature many of the terms are used interchangeably. Additionally, the use of the term exercise can be defined as ‘a subset of physical activity (PA) which is structured, planned and repetitive’. This is particularly evident in the Post 16 group who may not be participating in physical education but may have a structured exercise programme.

In the thesis, these will be abbreviated, however, other abbreviations will be preceded by their full name during their first mention in that chapter.

Table 1: Terminology of the main terms used in this thesis

Definition of High Quality Physical Education

Physical Education is the only subject that focuses children and young people's efforts and learning on their body and its physical development. It develops physical competence and confidence so that all children and young people can move efficiently, effectively, creatively and safely. It improves aspects of fitness and develops personal and interpersonal skills and attributes. It enables learners to develop the concepts and skills necessary for an active life. Securing the vision for high quality physical education depends upon confident and well qualified practitioners and scheduled protected time within the curriculum.

High quality physical education engages all children and young people in a wide range of experiences, activities, and disciplines which promote lifelong learning. It allows for progression and provides opportunities for children and young people to listen, think, create, investigate, and problem solve. It plays a key role in supporting children and young people's mental, emotional, social and physical wellbeing.

It should contain: competitive, collaborative and cooperative, group and individual, indoor, outdoor and aquatic, creative, adaptable and technical, high energy and relaxing activities. There should be opportunities for choice, negotiation and specialisation. It should provide a pathway to lifelong participation in physical activity and sport. The basic principles of high quality physical education are:

focus on learning and thinking skills to enable all children and young people, whatever their circumstances or ability, to take part in and enjoy physical education, physical activity and sport; to enable all children and young people to improve and achieve in line with their stage of development and potential. to promote children and young people's health, safety and wellbeing;

A high quality physical education programme will include learning to move (learning the skills, techniques and understanding required for participation in physical activities and sport) and moving to learn (physical activity as a context and means for learning).

Definition of Physical Activity

Physical Activity is a generic term referring to all bodily movement that uses energy. Physical activity may include planned activity such as sports or jogging but it also includes other daily activities such as housework or gardening. It is recommended that adults accumulate at least 30 minutes and children accumulate at least 60 minutes of moderate physical activity most days of the week.

Definition of Sport and School Sport

Sport is both broad and inclusive. It includes planned physical activity, whether organised or casual, which is aimed at expressing or improving physical fitness and mental wellbeing, forming social relationships or obtaining results in competitions at any level.

School Sport is the planned learning that takes place across the learning community in the extended school curriculum. School Sport is accessible to all young people who wish to experience or compete irrespective of their ability. Through the leadership and support of teachers and volunteers, every young person will have the opportunity for personal achievement through sport and help enhance the ethos and life of their school. School sport has the potential to develop and broaden learning that takes place in school physical education and forms a strong link with physical activity and sport within the local community.

***Adapted from PEPAS excellence group report 2011.**

About this thesis

Aim

This thesis aims to investigate physical activity, physical education and sport (PEPAS) participation and the adoption of health behaviours in Scottish adolescents. The thesis rationale is framed against two established biopsychosocial phenomena: The Scottish effect and the nested Glasgow effect — whereby an observed macro phenomenon is reflected on a more micro scale (see chapter 4 for definitions of these effects).

Within the first two studies of the thesis, a novel conceptual framework will be proposed encompassing the multiplicity of stress-related factors (environmental, psychosocial, and biological) which may influence the disproportionate health ‘gap’ between different socio-economic strata and the poor adoption of healthy behaviours, such as physical activity (PA), within lower socio-economic status communities within Scotland.

Adolescence is a critical time for establishing lifelong activity habits (Pearson et al., 2009). The forging of healthy behaviours is particularly important in adolescents in areas with documented poor health histories. It is well established that socio-economic status substantially influences health and mortality. As illustration, inequalities may be predominately related to socio-economic deprivation, which can be associated with several factors, including place of residence, gender and ethnicity (The Scottish Government, 2008). However, it has been acknowledged that the cause of health inequalities is a

complex issue, the immediate underlying mechanisms that determine socio-economic inequalities are the result of behavioural factors such as smoking, poor diet and lack of PA/exercise, specific exposures resulting from sub-standard living environments, and psychosocial factors such as the psychological reaction to specific life events (The Scottish Government, 2008).

After leaving compulsory education, over 60% of young Scots will cease participation in PA and sport: a phenomenon labelled ‘the post 16 gap’ (Honeybourne et al., 2004). Quantitative studies confirm the dramatic decline in patterns of PA as young people leave compulsory education to enter the workforce or progress to post-compulsory education. (Niven et al., 2009).

Despite these stark statistics, however, research investigating the decline in PEPAS during these transitional periods is virtually non-existent. In addition, most of the existing research has been quantitative in nature, serving to measure the magnitude of decline rather than investigating its core underpinning causes (NICE, 2007). The design of this thesis presents a novel, qualitative approach focused on addressing 4 relevant and related objectives:

1. To unravel the Glasgow effect and investigate the relationship between accumulative biopsychosocial stress, stress reactivity, and health behaviours with specific reference to PEPAS in adolescents.

2. To investigate if there is a relationship between self-perceived stress and detrimental health behaviours, such as reduced PA and smoking.
3. To explore adolescent's attitudes to health-related behaviours such as PEPAS participation, diet and substance use and determine the key influences impacting upon these behaviours.
4. To investigate why some young people, continue to participate in PA, sport, and exercise and to describe novel intervention strategies counter-acting adolescents perceived barriers and facilitators to PA and health behaviours.

CHAPTER 1 - THESIS OVERVIEW

1.1 Introduction to topic: Background

Scotland is frequently labelled ‘the Sick Man of Europe’ by the nation’s media (Shelton, 2009). The decline in industrialisation and subsequent accompanying social deprivation are regularly cited causal factors contributing to the health inequalities commonly reported in Scotland (Walsh et al., 2010). Previously, in the 1980’s, Scotland was the subject of a ground-breaking study conducted by Carstairs and Morris (1989), who devised a deprivation index illustrated that deprivation in Scotland was more severe than it was in England or Wales. Accordingly, although the higher mortality rate in Scotland was initially attributed to higher levels of deprivation, further surveys adjusting for differences in deprivation levels, highlighted paradoxical findings demonstrating that health inequalities may not be fully explained by differences in deprivation levels. This phenomenon was dubbed ‘the Scottish Effect’ (Carstairs and Morris, 1989; Whyne, 2009). Although socioeconomic status, cultural and modifiable risk factors associated with an unhealthy lifestyle may all be contributory factors to this paradox, the fundamental drivers of these health inequalities remain relatively unexplained. Furthermore, the poorer parts of Scotland, particularly within the Glasgow area, suffer the highest rates of non-communicable disease (Hanlon et al., 2005).

It is estimated that in Scotland over 500,000 individuals have been diagnosed with coronary heart disease (CHD), with 180,000 people requiring treatment for the condition (Hanlon, et al., 2005). Despite the decrease in mortality from CHD, adults aged 45-74 from the most

deprived areas of Scotland are 3.8 times more likely to die from CHD than those from areas of lesser deprivation ¹. Similarly, healthy life expectancy in deprived areas is considerably lower than that in Scotland as a whole (The Scottish Government, 2008). As illustration: in the most deprived areas, in 2005/06, healthy life expectancy at birth was 57.3 years for males and 59.0 years for females, compared to the national average of 67.9 years for men and 69.0 years for women. More affluent areas, in contrast, can expect an expectancy of greater than 10 % of the national average (The Scottish Government, 2008).

The circumstances underpinning Scotland's health problems, and our populations' low adoption of health-promoting lifestyles, are obviously varied and complex. Within this introductory chapter, I will outline the various influencing factors, articulate the core thesis question and outline the thesis structure.

In line with my professional domain, I predominantly focus on the role of PA, sport and exercise in combatting the health status of Scotland. A core *raison d'être* of Physical Education (PE) is to ensure lifelong activity (Kirk, 2013b), However with the reported decline in participation I wanted to investigate what role I, as a PE teacher, can play within my professional domain to facilitate PA, sport and exercise and avoid barriers relating to youth disengagement from PA, especially around the post 16 gap (Kirk, 2013b; Murdoch and Whitehead, 2012).

¹ 2008 version of this document stated 3.8 times more likely, whilst the update published in 2017 looks at figures from 2015 which shows a fluctuation between 3-4 times more likely in the most deprived areas. <https://beta.gov.scot/publications/long-term-monitoring-health.../00515868.pdf>

1.2 The importance of PA

The burden of physical inactivity on the NHS and its associated factors were highlighted in the Wanless report in 2004 (Wanless, 2004). The former UK NHS Chief Medical Officer (NHS, CMO) branded PA and exercise “the best buy” in public health (Morris, 1994). More recently Cath Calderwood the Scottish NHS, CMO highlighted that 9% of our population die as a result of physical inactivity, with an associated burden estimated at over £800 million each year (Calderwood, 2016).

Adolescence is recognised as a critical time for establishing lifelong activity habits, such as the adoption and uptake of PA (Pearson et al., 2009). Accordingly, the forging of healthy behaviours is particularly important in areas with documented poor health histories.

Existing research suggests that health behaviours, such as PA, are largely set during childhood and adolescence, and subsequently decline with age (Biddle et al., 2004; Aaron et al., 2002). For this reason, early life experiences of PEPAS are critical. In Scotland, the national curriculum is entitled ‘Curriculum for Excellence’. This has two main stages: the broad general phase which covers children from early years until the third year of Secondary school and the senior phase, which covers those from the fourth year of secondary school until the sixth year of Secondary school. Whilst school based PEPAS research interventions are on the increase, there is limited research on the senior phase of Curriculum for Excellence (CfE), for ages 16-18 years old.

1.3 The rationale: Personal and professional experiences

The questions arising in this thesis are born out of my own curiosity and personal experiences within my professional domain. I sincerely wanted to make my voice and opinions heard, positively influence policy and change aspects of my own professional practice, initially as a further education lecturer and subsequently as a PE teacher. My personal background was fairly working class, living twenty miles from Greater Glasgow. I never really had much experience of the education system from the ages of 15 to 33 years old. I was not a typical university student (at first) but I always had a mind for scientific enquiry. At primary school, I was always interested in sport, especially football, but when I attended secondary school I put on weight and found my playing ability stagnated. In fact, subsequently, I hated participating in PEPAS and often found myself on the rough end of the bullies; to counter this, my very supportive father who had participated in Olympic style weightlifting had encouraged me to join a gym (this was 1985, when there were few gyms!). Simultaneously, I met a very supportive PE teacher who got me interested in hurdles, sprints circuits and athletic events. I spent the next fourteen years training with weights and participating in athletics and gained a curiosity in exercise physiology and health promotion at a national level.

I was always highly interested in the reason why Scotland, and the Glasgow periphery, had particularly unhealthy statistics for non-communicable disease such as CHD, cancer and mental illness. I had been working as a membership advisor in a gym when I took the plunge, sold my car and went to college to study sport and exercise science, from here I progressed to university where I gained a research interest in unhealthy habits and how they

can affect athletic performance. I then found myself at Bristol doing a Masters of Science (MSc) in Exercise science, coupled with a part-time role teaching A level PE at a local college. Having completed my MSc, which looked at an exercise referral intervention and its effects on CHD risk factors in Glasgow and Lanarkshire. I became more curious as to the acculturation process in the West of Scotland. This led me to the belief that the Scots, by nature have a generous, but very dark, morbid nature. I grew up listening to old people compete over the number of medications they were prescribed and laugh and joke about eating too much and drinking too much, whilst men who did something about putting on weight were viewed as un-macho! When working as a guidance tutor at a college I was amazed at the young people who had image problems, but who rarely exercised or took part in activities except for the gifted few. In fact, having taught elements of sports science in previous lecturing jobs, I became even more curious. What was to blame? What is the answer?

1.4 A potential link to stress?

We, as a nation are quite stressed. After analysing the data for my MSc which involved outreach data collection in deprived communities. I became convinced that in Scotland there was a culture of machoism and working-class attitudes that contributed to these stress levels. An ethos of work hard all week, then get drunk at the weekend to counteract everyday stressors, prevailed. This led me to speculate that a nation that is stressed, and not particularly active, may have something underlying in its culture that contributes to the excess mortality evident in the Glasgow effect. In short even when accounting for deprivation we still have excess mortality, a phenomenon commonly referred to as the

Glasgow effect. Here, we explore whether this phenomenon could, at least in part, be explained by excessively accumulating life stress?

1.5 Broad research questions

Firstly, I shall address the broad research questions that became obvious to me as a practitioner. These helped me formulate my ideas and will be defined later in this thesis. My previous school experience got me thinking about this acculturation process and how the parochialism we see in Scotland has infiltrated the way we are physically educated, and effects the way that we perceive PEPAS and exercise.

This led me to formulate the research contained in this thesis. I wanted the answer to the broad research questions; does excessive biopsychosocial stress impact on PA? What are young people's perceptions of PEPAS/ health? What are the barriers and facilitators to post 16 PA? What effect does school-based PE have on us as we leave or prepare to leave school? And finally, how do we promote the sustainability of PA as we transition from childhood to adulthood?

1.6 Thesis Structure

To best address the stated aims and objectives of the thesis, the document was broken down into a series of four distinct studies or 'research foci'. Accordingly, the thesis does not follow the traditional monographic PhD thesis model, with a large literature review, followed by a large methods chapter and a series of results and discussion chapters. Instead, the thesis starts with a background chapter composed of these four research foci. Each

study has its own literature review, introduction, methods, results and discussion section. This approach has the advantage of establishing a publication record and therefore increasing the publishable content in the thesis. However, this may also be disadvantageous as it is often seen as a ‘more difficult’ approach (Kamler, 2008), on consideration I felt it better enabled a fuller exploration of critical topics. Prior to each research focus, the links between each study are established. Finally, the studies are summarised and concluded in the last chapter, together with the conclusion and implications of my thesis to my professional domain.

1.7 Core research foci

The first study, contained in Chapter 4, is a desktop literature review on health inequalities in Scotland, entitled ‘Unravelling the Glasgow effect’. This will be used to set the scene for the other studies. This study will propose the unifying theory that accumulative, multi-source stress plays a mediating role in health inequalities, and all-cause mortality, specifically highlighting the negative consequences of poor health behaviours —such as poor dietary habits and substance misuse—, and the positive remedial influence of PA. The study will place special emphasis on the developing adolescent and how life stressors, and heightened stress reactivity, negatively influence health and eventually lead to poor health outcomes.

The second study, contained in chapter 5 analyses the relationship between self-perceived stress and health behaviours such as diet, smoking, and PA. The sample will be drawn from those who are approaching the end of the broad general education (BGE) phase of CfE

(The BGE phase covers those up to 16 years old, senior phase-16-18 years old), and who have experienced life changing stress.

This questionnaire-based study examines the dimensions of stress and self-perception and explores if these are related to the health behaviours that were, within the desktop study, deemed problematic. The theme of the research focus is the question: Is there a difference in PA levels between those that have experienced greater stress and those that have not?

Study 3 and 4 are contained in chapter 7 and 8 respectively. However, to provide the necessary background in detail for these studies they are preceded by a narrative review contained in Chapter 6. Study 3, contained in Chapter 7, involves those at the broad general phase of CfE (12-15 years old), but focuses predominately on S1-S2. The third study involves collecting and analysing qualitative data, which will focus on the perception of health behaviours in school age children 12-15. The research question arising from this study aims to determine the onset of barriers and facilitators to PEPAS in school age children. The research also explores adolescent's attitudes to health behaviours such as PA, diet and substance use and determine which aspects of healthy living are important to them. The data will be looking for themes relating to PEPAS participation and other health behaviours as this is critical to the author's professional role in delivering the health and wellbeing curriculum.

Study 4, contained in Chapter 8, concentrates on adolescents aged 16-18 years old. This study aims to investigate the reasons behind the decline in PEPAS post-16 with a focus on

declining PA levels post-16, which ultimately may affect PA levels throughout life. The aim of the guide is to establish adolescent's perceptions of the role of PA and their experiences of participating in PA and previous experience in formal PE. Participants will be voluntarily recruited via work-based contacts.

1.8 Novel elements of this thesis

This thesis is novel in several ways. Firstly, no clear evidence-led rationale exploring the broader biopsychosocial nature of the negative health consequences associated with the 'Scottish effect', and the encapsulated 'Glasgow effect', has been presented to-date. Secondly, given the therapeutic and preventative benefits of PA in offsetting the negative consequences of poor health habits, it seems surprising, so few studies have directly investigated the decline of PEPAS during adolescent transitional phases. Within this thesis, I seek to add context-specific evidence to the existing research base. Lastly, within this thesis investigative, qualitative methods seek to illuminate both the adolescent's perceptions of stress, and attitudes to PEPAS and other health behaviours with the further aim of uncovering perceived barriers and facilitators to PEPAS post 16.

Few studies have qualitatively investigated the reasons for PA and sport participation decline in 16-18-year old's and the associated barriers and facilitators. This is themed within the professional context of a PE teacher. This thesis helps to unravel research questions related to my professional domain and to address the implications for physical educators, curriculum designers and policymakers.

1.8.1 Potential limitations

Conducting research in this capacity and scale, on a limited budget has several potential limitations. One such limitation, particularly in research focus 2 is the small sample size, which can have implications for the statistical tests employed. PA and stress measurement using questionnaires may also result in recall bias, as participants may find it difficult to accurately evaluate their activity patterns retrospectively. Additionally, the other two data based qualitative studies in chapter 7 and 8, involved the use of focus groups, and was designed to capture rich, ecologically valid data. However, the use of focus group studies involved a relatively small number of participants. As a result, the findings of this study may not be generalizable, however the purposive sample captured for these studies typically reflected young people from the areas intended. This study was designed to capture opinions and perceptions of adolescents within a specific geographical location, using a clearly defined purposive sample.

1.9 Conclusion

Nurturing the life-long physical health of its citizens should rank highly on any country's priority list. Good health habits are a fundamental prerequisite of healthy communities whilst the cost of prevention as outlined by Wanless (2004) is diminutive in comparison to providing health services for an unhealthy population. But understanding how various societal factors interact to influence health behaviours is a complex endeavour. This thesis will start with a broad, wide-sweeping approach. Accordingly, the thesis initially explores the potential drivers of Scottish health and the associated Scottish and Glasgow effects. The thesis suggests that the Scottish effect, and its nested sub-effects, can be explained

through the convergence of multiple stress-promoting phenomena all conspiring to expose the Scottish population to unusually high levels of accumulating life stressors. Finally, considering the state of the nation's health, focusing on health policy and PA/PE/PEPAS policy in Scotland, before zooming in more precisely on the key populations of interest, and corresponding practical implications. This will involve the highlighting of shortcomings that I have become aware of in my professional domain. In particular relating to the nature of curriculum content and delivery, as it applies to sustaining activity in those at the senior phase of CfE aged 16-18 years.

CHAPTER 2 - INTRODUCTION

2.1 Background: Health inequalities in Scotland

Scotland has been dubbed ‘the sick man of Europe’ on account of its poor health record, lifestyle factors and higher mortality rates when compared with other European countries (Bromley and Shelton, 2010; Shelton, 2009). Since the 1950’s Scotland’s life expectancy rate has improved at a much slower rate than other comparably wealthy nations.

Furthermore, 43% of adults are classed as chronically ill or disabled (Bromley and Shelton, 2010).

Whilst various hypotheses exist as to the reason behind poor mortality and illness, the main attributions point to lifestyle factors. Sixty-one percent of adults in Scotland can be categorised as either overweight or obese, a figure that is statistically significantly higher than other British countries (England 56%, Northern Ireland 54%, $p < 0.01$). Additionally, 25 % of 15-year olds can be categorised as overweight, whilst 3% are obese. The statistics for alcohol consumption are also greater amongst adults in comparison with other European countries with 44% of males consuming more than 4 units of alcohol daily a figure statistically higher than that of England (41% , $p < 0.01$), (Bromley and Shelton, 2010; Gray et al., 2012).

2.2 Health inequalities and deprivation

Health inequalities can be defined as the variances in health status that occur between different groups of the population (The Scottish Government, 2008). Within Scotland, a

child's risk of negative health outcomes has been shown to be greater in those from poorer social classes, with a greater risk from negative health outcomes evident if they live in an area of multiple deprivations. For example, there is a nine-year gap in male life expectancy between those that live in the affluent area of East Dunbartonshire when compared to those living within North Glasgow postcodes (NHS GGC, 2008). Whilst gender differences are evident, there is still a life expectancy gap of almost seven years between females from the same area. In Scotland, health inequalities are particularly evident in areas of low household income (NHS, GGC, 2008).

Inequalities may be predominately related to socio-economic deprivation, which can be associated with several factors, including place of residence, gender and ethnicity (The Scottish Government, 2008). However, it has been acknowledged that the cause of health inequalities is a complex issue, the immediate underlying mechanisms that determine socio-economic inequalities are the result of behavioural factors, such as, for example, smoking, poor diet, lack of PA, and include specific exposures resulting from sub-standard living environments and psychosocial factors such as the psychological reaction to specific life events (The Scottish Government, 2008). The main factors that determine how different socio-economic groups are affected by health inequalities are dependent on social class, income and access to healthcare systems.

Although statistical adjustment for deprivation levels show that some negative health outcomes transcend socio-economic classes, the importance of social inequality cannot be ignored, and may suggest a deep rooted cultural belief system with regards to health messages

and behaviours. This has been particularly evident when considering the more recent work of Gray and colleagues (2012) which highlighted that Scotland, and in particular Glasgow's health problems are inextricably linked to social deprivation and poverty (Gray et al., 2012).

Furthermore, the matter of health inequalities becomes more complex when investigating the effect that unequal societies have on poor health outcomes such as obesity, CHD and cancers. It has been suggested that the presence of a higher level of economic inequality not only has an effect on the poorer individuals from a society but affects the health of everyone within society. The recent work of Wilkinson and Pickett (2009) suggested that those from the most unequal societies are three times more likely to suffer mental illness and 2.5 times likely to be classed as clinically obese (Wilkinson and Pickett, 2009). At present the UK has one of the greatest income inequality gaps in the developed world, along with the United States of America and Portugal. The suggested mechanism through which social inequality impacts health is proposed to be mediated by a negatively, and persistently, altered neuro-biological chemical environment driven by perceptions of social threat (Bromley and Shelton, 2010; Gray et al., 2012). These suggestions highlight that whilst greater equality within a society may benefit the health outcomes of those that are poorer within society, these benefits transcend across socio-economic classes. Additionally, it has been suggested that there is a greater need for increased exposure to exercise and physical activity in societies with greater inequality (Wilkinson et al., 2005).

2.2.1 Social relationships, social support and health behaviours

Environmental influence from parents, peers and society in general have been linked to physical health outcomes. There has been a recent drive on emphasising the role of social relationships, social support and networking on physical health (Cohen, 2004). It has been established that stressful events have a negative impact on physical health. Stress buffering, provided through social support mechanisms, relies on the belief that support is available during periods of stress. Accordingly, the perceived availability of support from social networks has been shown to ease the symptoms of stress, such as depression and associated physiological diseases elicited as a response to this psychological stress (Cohen, 2004). The importance of social relationships and an individual's social network is particularly important during adolescence, when many health behaviours are forged. Parental influence has been shown to be particularly effective in promoting positive health behaviours, such as the promotion of healthy dietary habits, avoiding smoking and early use of alcohol. Furthermore, high levels of school engagement also have a positive effect on these behaviours. However, self-perception, self-image and the 'desire to fit in' with peers for fear of being viewed as an outsider, is a strong driver in determining adolescent health choices.

2.3 The consequences of health inequalities

It is estimated that in Scotland over 500,000 individuals have been diagnosed with coronary heart disease (CHD), with 180,000 people requiring treatment for the condition. Despite a recent decrease in mortality from CHD, adults aged 45 to 74 inclusive, from the most deprived areas of Scotland, are 3.8 times more likely to die from CHD than those from areas of lesser deprivation (The Scottish Government 2008), suggesting widening

inequalities in relative terms. Similarly, healthy life expectancy in deprived areas is considerably lower than that in Scotland overall. In the most deprived areas in Scotland in 2005/06, healthy life expectancy at birth was 57.3 years of age for males and 59.0 years for females (The Scottish Government 2008). Some health inequalities are determined at, or even before, birth. For example, there is an association with parental socio-economic status and the development of stomach cancer and stroke risk in later life (The Scottish Government, 2008). This is particularly evident in areas of high deprivation, where low birth weight has been shown to be associated with an increase in the risk of stroke and CHD in later years. The incidences of lung cancer, chronic liver disease and death as a result of substance misuse, are all greatly enhanced in those who belong to the more deprived categories (The Scottish Government, 2008). Inequalities are also influenced by gender, with males showing greater incidences of smoking and alcohol-related disease (The Scottish Government, 2005b; The Scottish Government, 2008). A recent population-based study by Leyland and colleagues reported that the incidence of premature deaths had decreased in the Scottish population over a two-decade period since 1980, with the incidence of CHD and cancers having decreased significantly. These reductions were greatest in those from socially advantaged groups. Furthermore, the study showed that mortality in those aged 15 to 44 had increased due to rises in suicides, assaults, and drug and alcohol misuse. Leyland concluded that these findings were due to inequalities which were determined by lifestyle factors, which in turn were determined by poverty (Leyland et al., 2007b; Leyland et al., 2007a).

2.4 Health inequalities and public health policy in Scotland

Since devolution, several policy documents have focused on health inequalities in Scotland. The white paper ‘Towards a Healthier Scotland’ (Secretary of State for Scotland, 1999) recognised the social and environmental nature of Scotland’s health problems, rather than just focusing on controllable lifestyle factors. In 2003, the white paper ‘Partnership for Care’ was published (The Scottish Executive, 2003b). This placed emphasis on the health boards having more autonomy, whilst emphasising the importance of working in partnership with other stakeholders to tackle health inequalities. Furthermore, this document highlighted the importance of the public’s point of view and emphasised that this should be considered when designing or adapting health services. In order to facilitate these recommendations, the Scottish Executive published ‘Improving Health in Scotland’ (The Scottish Executive, 2003a) in the same year. This emphasised the necessity for tackling the five major risk factors that affect health in Scotland, namely: tobacco use, alcohol misuse, low fruit and vegetable consumption, poor PA levels and obesity.

‘Delivering for Health’, published in 2005, highlighted a series of comprehensive changes aimed at tackling inequalities leading to what the government report as the big killers, namely cancer, CHD and strokes. The strategic plan behind ‘Delivering for Health’ was specifically aimed at improving health services for the Scottish population, whilst decreasing waiting times and ensuring increased access to medical care for those most at risk from killer diseases (The Scottish Government 2005b; The Scottish Government 2008). In 2007, the new SNP-led Scottish Government set up a ministerial task force leading to the publication of ‘Equally Well’ (The Scottish Government, 2008). This is the

most comprehensive Scottish Government report to date, aimed at tackling health inequalities. The paper recognised the challenges that face the Scottish population and set out a strategic action plan. Their recommendations acknowledged that Government policy and action alone will not help to combat health inequalities, but that communities and partnership working are required. Furthermore, a series of recommendations were outlined to address the underlying causes of inequalities, namely poverty and unemployment, physical environment & transport, alcohol, drugs and violence.

2.5 Wanless report and the importance of PA

‘The Wanless Report’(2004) set out how the Department of Health, the NHS, Local Authorities and other influential public sector agencies could all play a vital role in encouraging the whole population to adopt healthier lifestyles (Wanless, 2004). Wanless stressed the importance of tackling health inequalities and highlighted the fact that coronary heart disease, cancer and type 2 diabetes are the major determinants of health inequalities. Tackling these inequalities requires a comprehensive set of objectives, particularly within communities most at risk from ill health (Wanless, 2004). The evidence base directly attributing these illnesses to lifestyle factors such as obesity, smoking and physical inactivity is currently strong and well documented (Hardman and Stensel 2003).

In particular, Wanless criticised the Department of Health for overlooking the rising rates of obesity and failing to define a clear public health strategy to address the issues of smoking and physical inactivity(Wanless, 2004). The burden of physical inactivity and its associated factors was also highlighted by Wanless (2004), who reported that physical inactivity costs

the NHS £8.2 billion annually, whilst the increasing costs of health care, hospitalisation, medication and operative procedures for CHD costs the NHS a further £10 billion annually (Wanless, 2004). Since the release of this publication, it has been highlighted by a House of Commons select committee on health that there has been a failure to heed Wanless's warning, with an estimate that the current cost as a result of physical inactivity is £16.9 billion (Lee et al., 2012).

It is reported that 2500 Scots die prematurely each year due to a lack of PA (Calderwood, 2016). Additionally, 9% of our population die due to physical inactivity. Furthermore, it has been reported that physical inactivity costs Scotland over £800 million each year (Scarborough et al., 2011; Calderwood, 2016). Despite strong scientific evidence that PA can protect against many of Scotland's leading chronic diseases (e.g. coronary heart disease (CHD), some cancers, obesity, diabetes, hypertension), and the role PA can play in promoting positive mental health and well-being, two thirds of Scottish adults and one third of Scottish children do not participate in sufficient PA to gain these benefits (Calderwood, 2016).

Wanless predicted that a major public health crisis could occur if the issues currently associated with an aging population continued. Importantly, he reported that PA and improved diet were important levers for combating the ill effects evident from the current lifestyles of much of the UK population. Since the Wanless Report, there has been an exponential rise in government-led initiatives, with the aim of tackling these existing health inequalities. Various national and locally led initiatives have come into existence aimed at

increasing PA levels both in the adult population and in children and adolescents (Wanless, 2004; The Scottish Government, 2005b).

2.6 Let's make Scotland more active

The previous Labour led Scottish Executive produced a white paper “Towards a Healthier Scotland” (Scottish Office, 1999), this recommended the formation of the ‘National Physical Activity Task Force’ which was formed in 2001. In 2003, the task force produced ‘Let’s make Scotland more active’ which formed a broad framework of objectives and priorities for the development of a more physically active Scotland. This report set a minimum recommended level of one hour of moderate PA per day for children aged 16 and under, with a target established that 80% of children should meet this level by 2022. Simultaneously, the Physical Education Review Group was set up as a direct result of the recommendations of the Physical Activity Task Force, which identified significant problems within the PE curriculum. This was chaired by Michael O’Neill from North Lanarkshire Council in collaboration with Professor Dave Collins and Dr Mike Jess from the University of Edinburgh, additionally the group contained a range of stakeholders from the Scottish education and schools sector. This group recommended that local authorities and schools should be working towards a target of providing children with at least 2 hours of good quality PE per week (Scottish Executive, 2004). The timescale for the recommendations was 2008, but by 2006 a progress report arising from the recommendations of the Physical Education Review Group found that only 5% of primary schools and only 7% of secondary schools at stages S1-S4, were meeting the 2-hour target. No schools met the target at stages S5 and S6 (Scottish Executive,2006). Although these

targets are discussed in detail in Chapter 7, research study 4, it is important for background information to note that since the implementation of this target it has been reported that updated figures show an upward trend for 2016, 98% of all primary and secondary schools were meeting the target level of PE provision, the same as in 2015. In primary, 99% of schools were providing at least 120 minutes of PE to all pupils. However, on closer analysis of the new datasets, no figures exist outlining the participation levels of those in the senior phase of schools in S5 and S6.

In addition, although this thesis looks at broad participation across PEPAS it is important to realise that PE in many schools may have been confused with PA. Accordingly many schools may prioritise the accumulation of PA by focusing on accumulating PA levels in order to combat the poor health and obesity issues of the nation (Kirk, 2006). This thesis, accordingly, aims to address the national issues by focusing on the changes required in PE on a broader context, to promote lifelong sustainable PE and ultimately lifelong PA participation. Additionally, it is worth noting that it is not unusual for sports coaches to be used within curriculum time to ‘teach’ PE classes (Lavin et al., 2008), and this may be incorrectly tallied in the schools quality PE percentages.

In addition to the PE targets, Sportscotland works in partnership with all local authorities to support the Active Schools (AS) network. This initiative originated from the legacy of the School Sport Co-ordinator programme launched in 1999 and the Active Primary Schools initiative and is funded through the national lottery. The AS aims to provide quality

opportunities to participate in Sport and PA before school, during lunchtime and after school, and is used across both the primary and secondary sectors.

2.7 Lifelong Participation

There are efforts at a policy initiative level to combat the poor health of the nation. Despite this (as addressed later in this thesis) the recent Active Healthy Kids report card showed that Scottish children are among the least active in the world. An analysis of 38 nations ranked Scotland joint last for PA. Furthermore, amongst 11-15 year olds, only 21% of boys and 15% of girls in Scotland met the Scottish, UK, and international recommendation of at least 60 minutes of daily PA of at least moderate intensity (Reilly et al., 2016). The conclusions from this report highlighted that more needs to be done to decrease sedentary behaviour. As a teacher/lecturer I realise that the evidence shows that pupil experience gained in curricular PE can shape lifelong attitudes towards PA and determine whether individuals dedicate their free time to the pursuit of activity, or choose a path of inactivity (Allender et al., 2006). The philosophy behind CfE is one of promoting lifelong activity through PE and states that PE:

enables learners to develop the concepts and skills necessary for participation in a wide range of physical activity, sport, dance and outdoor learning, and enhances their physical wellbeing in preparation for leading a fulfilling, active and healthy lifestyle (Education Scotland, 2015).

The literature has shown that there is a significant link between participation rates in PA in childhood, particularly adolescence, and the likelihood of continued participation throughout life (Scheerder et al., 2006). However, in addition to the failure of capturing PE levels in those post 16, there is also a paucity of evidence investigating why people do and

do not participate in PA and the relationship between their levels of participation at different stages of life.

2.8 Research questions

In this thesis, I intend to look at the role of PE in shaping the attitude of adolescents with an interest in those at the critical transition stage of 16-18-years of ages. Although it is my understanding, and evidence suggests, that attitudes to PEPAS are largely moulded before these ages (Kirk,2005; Kirk 2013b; Murdoch and Whitehead, 2012), the paucity of evidence in this age group merits investigation. Furthermore, when understanding the health problems of the nation and the need to promote lifelong PA, many are deterred from this. For this reason, I intend to investigate the research questions outlined below:

1. To unravel the Glasgow effect and investigate the relationship between accumulative biopsychosocial stress, stress reactivity, and health behaviours (with specific reference to PEPAS in adolescents).
2. To investigate if there is a relationship between self-perceived stress and health behaviours such as PA and smoking.
3. To explore adolescent's attitudes to behaviours such as PEPAS participation, diet and substance use and determine the key influences impacting upon health habits and perceptions.
4. To investigate why some young people, continue to participate in PA exercise and sport while others may not, and to describe novel intervention strategies based upon adolescents perceived barriers and facilitators to PA and health behaviours.

Having established the research questions pertinent to this thesis, the next chapter focuses on the process of methodological decision making, to allow a valid, reliable data collection process to address these research questions.

CHAPTER 3 – METHODOLOGICAL DECISION MAKING

3.1 Introduction

This chapter focuses on the methods employed in this thesis, including the justification of the research tools that were used to collect data. In accomplishing this objective this chapter first provides an overview of the methods commonly used in PEPAS research, before discussing the rationale underpinning the methodological decision-making for this thesis. As noted in Chapter 1, this thesis does not follow a traditional monographic model. Rather, each linked study is presented in the format of a standalone research publication. This format was chosen as an ideal method of not only disseminating the problems addressed in this thesis but also as a vehicle of career development. Enabling the establishment of a publication record and therefore increasing the publishable content in the thesis through what Kamler (2008) refers to as a ‘writing in progress’, enabled me to experience peer reviewed feedback whilst also adding to the existing body of knowledge (Kamler, 2008). Accordingly, whilst this chapter discusses broader methodological decisions, each distinct investigation within the thesis contains a more in-depth description of the methods used to address the specific research question posed within that chapter.

Researching, evaluating and exploring the effectiveness of health, PE and PA research requires a rigorous, systematic approach to data collection (Bowling, 2009). When conducting such research, it is not uncommon to collect data within a defined geographical area since, for example, resources may not permit the collection of data on a nationwide scale. While findings from a study carried out within a specific geographical area might not

be fully generalisable beyond its boundaries, this does not limit the potential usefulness and wider relevance of the data and conclusions (Bowling, 2009). Furthermore, exploratory research conducted in one area can be useful in helping to inform larger scale research projects and enabling researchers to define more specific research questions. The geographical focus of this research was Glasgow and the surrounding area. Additionally, the primary aim of all studies, whilst adding to the research body was to disseminate and inform practitioners to push an ‘initiation for change’ arising from the finding of the studies within this thesis.

Within this chapter I will outline the main methods of research used in PEPAS studies followed by a breakdown of the methods chosen for each research focus. Finally, an explanation of the analysis will conclude the chapter.

3.2 Research methodologies

3.2.1 Quantitative research

In PEPAS, quantitative research refers to the systematic scientific investigation of social phenomena and their inter-relationships (Bowling, 2009; Thomas et al., 2015). Quantitative methods rely on collecting empirical data that can be analysed using statistical, mathematical or computational techniques. Laboratory based science, in which experimental tests are conducted, field based testing, epidemiology and intervention based studies all lend themselves to quantitative research. This type of research is usually used to answer scientific questions based around a hypothesis (Bowling, 2009; Thomas et al., 2015). In PEPAS studies, quantitative methods are commonly applied to questionnaire

based surveys, in which data are coded to allow numerical analysis using a statistical package such as Statistical Package for Social Sciences (SPSS) or Minitab, with SPSS being the preferred option in this thesis due to it being more accessible. The main objective is to determine the relationship or differences that occur between the “independent variable”, i.e. the element of the data which the researcher is manipulating and the “dependent variable”, i.e. the element of the data which is manipulated during an experiment and which depends on the dependent variable. The research method employed in research study 2 in this thesis used cross sectional data. The initial literature review as outlined in research studies 2 and 4 highlighted that there was a lack of qualitative evidence relating to barriers and facilitators of PEPAS particularly in Glasgow.

However, to test the effects of stress on PA it was deemed necessary to quantitatively determine if significant differences exist in uptake of PA between adolescents who have experienced high life stress, in comparison to those who have not. Similar methods were employed to investigate whether high life stress can explain differences in other health behaviours, such as smoking and alcohol consumption. Additionally, to investigate the relationship between perceived stress in adolescents and PA levels the methods also involved analysing the coefficient of correlation. When interpreting such results, it is important to note that these merely reflect a relationship between variables and do not infer causation. Causation can only be shown with an experimental study in which an independent variable is manipulated to examine its subsequent effects (Thomas et al., 2015).

3.2.2 Qualitative research

In contrast to the objective realms of quantitative research, qualitative research is more subjective and relies heavily on the interpretation of the data by the researcher (Bowling, 2009; Huston and Hobson, 2008; Thomas et al., 2015). This type of methodology is particularly useful as a way of exploring meanings, feelings and perceptions in more detail than a quantitative method would allow (Lewis and Ritchie, 2003). Qualitative research is useful in situations where it is unclear what type of issues might arise from a study and is also useful in developing research to inform a larger scale study (Bowling, 2009; Smith, 1998).

However, as pointed out in the qualitative National Institute for Healthcare and Excellence (NICE, 2007) review on adolescents PA, large scale quantitative studies are useful in capturing the direction and strength of trends in PA and sport research, but they do little in explaining why children and adolescents cease to participate in PA and sport. For this reason, qualitative research is used in order to better understand the perceptions and experiences of PEPAS.

Qualitative research has gained an increased prominence in health services and educational research in recent years (Smith, 1998). Recognition of the value of a qualitative approach implies acceptance that these methods alone are not able to comprehensively evaluate the complex factors, such as the perceptions and beliefs of individuals that occur in public health research. In PEPAS and health research, it is common to develop “grounded theory”. In other words, an inductive approach which involves discovering the theory arising from

data that have been systemically gathered and analysed using methods such as interviews (both structured and unstructured), focus groups, observational studies and case studies (Smith, 1998).

Themes in qualitative data can be identified in two main ways. Deductive (or ‘top down’) approach tends to focus on the researcher’s theoretical interests. In contrast, inductive, which is often called the ‘bottom up’ approach, does not rely on a theoretical interest or research hypothesis but instead emerges from a process that involves raw data, being collected, coded and analysed (Braun and Clarke, 2006). During analysis, these codes are organised into themes. There are a range of techniques available to analyse and organise the transcripts of interviews, focus groups, etc. that emerge from qualitative research. Two of the most commonly used methods are “thematic analysis” and “content analysis”. Thematic analysis focuses upon meaning, allowing a more discursive interpretation, as individual codes can cross-reference multiple themes, whilst content analysis employs mutually exclusive categories to count the frequency of codes and is more commonly used to describe trends in a dataset and to test any hypotheses statistically (Bowling, 2009).

Although thematic analysis may be regarded as being similar to grounded theory, Braun and Clarke (2006) argue that thematic analysis is different. Most notably, they claim that although grounded theory is related to a particular philosophical position, thematic analysis is not. Also, grounded theory is based around developing an overarching theory that attempts to explain the findings from the data, whereas the themes in thematic analysis seek to help generate a series of ideas useful for the development of further research (Bowling,

2009). The choice of thematic analysis is its flexibility and its ability to be conducted by early career researchers. Furthermore, Clarke and Braun (2017) highlight the notion that thematic analysis can be used for virtually any type of qualitative data (Clarke and Braun, 2017). Chapter 7 and 8 of this thesis involved data collection using a series of focus groups coded using thematic analysis.

3.2.3 Triangulation

The decision of which research methods to employ does not need to be restricted to solely qualitative or quantitative methods, but may combine these techniques within the same research study (Bowling, 2009). The combination of techniques in research is known as triangulation. The rationale behind data triangulation is that using a mixed approach to data collection and analysis may help overcome the shortcomings of using one particular method and may also add another useful dimension to the research and evaluation conducted (Bowling, 2009). Quantitative and qualitative data collection can be conducted in unison and can be complimentary to each other when applied to specific research questions. For example, when self-completion postal questionnaires are used, a qualitative section may be added that provides opportunities for open comments and allows a more in-depth analysis of the quantitative data. Similarly, triangulation may be used within one method to increase validity (for more detail see Patton 1999). Although the questionnaire used in Chapter 5 was intended to allow triangulation by containing qualitative comments, the data collected was insufficient to allow any analysis.

3.3 Quantitative research instruments

3.3.1 Quantitative method used in research study 2

Measurement of PA is notoriously complex but is crucial to the understanding of the relationship between PA and health (Cooper, 2003). Within the realms of PA energy expenditure measurement, there exists two main categories of measurement: direct and indirect. The gold standard of direct measurement is known as doubly labelled water' (DLW) or in a laboratory context, direct calorimetry. With the rise of technology comes the use of heart rate monitors, GPS and uni-axial and tri-axial accelerometers. Direct methods such as accelerometers have a higher validity than indirect methods, however, the resources required, and cost can be expensive (for details of the advantages and disadvantages of methods see Cooper (2003). Indirect measures such as questionnaires are easy to use, and when validated against gold standards can provide a valid measure of PA. Self-completion, questionnaires offer one of the least expensive modes of data collection from in PA research (Bowling, 2009; Cooper, 2003). They offer a relatively quick method of gathering a large amount of data in a short period of time and can be used to measure events, the frequency of and levels of PA, and the behaviour and attitude of the targeted population (Bowling, 2009; Cooper, 2003). A cross sectional survey, which takes a snapshot of the surveyed population at a specific point in time is one of the most commonly applied methodologies in PA research due to its ability to capture data over a relatively short period of time. Whilst PEPAS researchers may choose to develop their own questionnaires, usually informed by previous research and pilot studies, the use or adaptation of a pre-existing questionnaire has the advantage that it has been previously validated (Bowling, 2009; Cooper, 2003).

3.3.2 Justification for the questionnaire used in Chapter 5

After the conclusion of research study 1 (Chapter 4), where it was highlighted that stress may be a factor in determining PA levels. it was deemed necessary to carry out a cross sectional measurement of PA levels and the relationship with stress. This paved the way for Chapter 5, research study 2. The questionnaire used in this study is detailed in appendix 1. The questionnaire was structured to allow easy completion and to maximise response rate, by ensuring that minimum time was required to complete the questions. The self-completion questionnaire used in this study was adapted from a questionnaire based survey conducted by Kowalski et al, (1997). This is a seven-day self-administered recall questionnaire deemed valid and reliable for adolescents of 14-17 years of age, that has demonstrated good reliability and validity in previous studies. The basic questionnaire had been used previously in a series of surveys in Scotland, including the Physical Activity in Scottish Schoolchildren (PASS) study (Inchley et al., 2008). A copy of the full questionnaire is shown in appendix 1. This questionnaire was chosen due to its ease of use, previous use on a Scottish population and the lack of sufficient financial resources to employ direct measures of PA measurement.

Stress was measured using a validated questionnaire, the ‘Perceived Stress Scale for Adolescents (Cohen et al.1988). This instrument has been shown to be a useful for identifying relationships between stress and other health related measures. Other health behaviours, such as smoking and substance misuse, were collected using both quantitative and an open qualitative comments box in the PA questionnaire.

3.4 Qualitative research instruments

3.4.1 Research instrument used in Chapter 7 and 8

To collect data for Chapter 7 and 8, a set of interview questions was first devised by the author (JGC). The topic guide for research study 3, in Chapter 7, aimed to understand what ‘makes young people tick?’. This study was focussed on investigating young peoples’ perceptions and attitudes to PE at school and their understanding of PA in their daily lives. Additionally, with the embedding of PE in the health and wellbeing curriculum, the study aimed to explore young peoples’ perceptions and attitudes to healthy living. Furthermore, these objectives may be used to inform the design of novel teaching methods that professionals could use to communicate health and wellbeing messages in order to adolescents to improve their health behaviours.

A similar process was followed for Chapter 8 (research study 4), which focused on those who are 16-18 years of age. Both are detailed in appendix 3 and 4. To allow flexibility, while maintaining a structured flow to the focus group session, a ‘moderately structured’ approach was used. This allowed the facilitator to encourage each participant to offer a response and facilitated discussion of these responses. Thus, enabling data capture whilst keeping a structure to the session. The topic guide also included a series of prompting statements pertaining to the research questions and relevant prompting examples. The order of the questions was also considered by the researcher so that the session could flow naturally and therefore stimulate maximum discussion.

To enhance face validity and practice the delivery of the content contained in the topic guide, a pilot study was conducted using four members of the general public. The aim of this pilot was to ensure clarity and refine the wording of the questions as required, before the questions were finalised for the main study.

3.4.2 Justification for the use of focus groups in Chapter 7 and 8

Focus group methodology was chosen as the predominant method of data collection in these two studies. The use of focus groups was deemed appropriate as they would provide a richer data set than could be provided by using quantitative methods, such as questionnaires. Other qualitative methods, such as one to one interviews, were ruled out due to the belief that the focus groups would encourage discussion to help develop important research themes. Focus groups are reported to provide the richest data in relation to public views of priorities in health services (Kitzinger, 1995). Additionally, their use is seen as advantageous due to their ability to inductively generate further research ideas (Huston and Hobson, 2008). In the case of this professional Doctorate, the focus groups were used not only as a method of data capture but also served to initiate curriculum enrichment by involving pupil voice. This is important for the purpose of understanding pupils' experiences in PEPAS and highlighting barriers and facilitators to participation. This may lead to better understanding of the nature of successful pedagogies (Forsyth, 2014).

The use of focus groups in health, and education research also provides an unobtrusive method for collecting data on the student views of services whilst providing more critical

comments than other more quantitative data collection techniques. The use of focus group based discussions may generate comments that are more critical than those observed in individual one-to-one interviews (Huston and Hobson, 2008). Furthermore, qualitative research using focus groups has been reported to be invaluable in accessing hard to reach populations (Neale et al., 2005).

However, focus groups also have the potential to provide biased data, since the interpretation of the data is largely the responsibility of the researcher (Neale et al., 2005). Furthermore, the nature of group dynamics can have its disadvantages. The participants may be reluctant to share feelings, beliefs and actions. Additionally, the social nature of group interaction can result in conformity, where, some participants may simply agree with others or may make statements that do not truly reflect their own opinion (Huston and Hobson, 2008). Focus groups do, however, present an ideal opportunity to help the researcher understand and explore the participants' perceptions in more detail than quantitative methodologies.

3.5 Methods of analysis

3.5.1 Data analysis used in Chapter 5

Whilst chapter 5, research study 2, details the methodology used for analysis it is important to provide an overview behind the analysis that was conducted using SPSS. Following the scoring guide from Cohen and Williamson (1988), participants were required to answer each question using a five-point Likert scale score ranging from 0 (never) to 4 (very often). Perceived stress scale scores are obtained by reversing the scores on the four positive items,

e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4,5, 7, and 8 are the positively stated items. Total scores range from 0 to 40, therefore participants with higher scores had higher levels of perceived stress.

When working with data, the researcher must decide which tests should be carried out and whether the tests should be parametric or non-parametric. This becomes more complex when testing for 'Likert' type scales. In research study 2, except for measuring the difference between categorical variables such as age, Non-parametric tests were used.

The debate whether to use parametric or non-parametric tests with data arising from Likert type data is ongoing (Steele et al., 2011). Some researchers advocate treating 'Likert' scale data as interval level data, advocates of this approach realise that this opens up the possibility of using parametric tests which are seen as the most powerful option. The use of non-parametric data may give similar results to parametric data when analysing Likert scales but are based on the ranks of the data rather than the means. Whilst it is appreciated that the use of the data from the PA questionnaire may merit parametric analysis, Allen and Seaman (2007) warn that initial analysis of scalar data should not involve parametric tests. Additionally, the choice of what method to use was further influenced by the work of Boslaugh (2012) who stated:

Data gathered by Likert scale is ordinal because although the choices are ordered, there is no reason to believe that there are equal intervals between them. For instance, we have no way of knowing whether the distance between "Strongly agree" and Agree is the same as the distance between "Agree" and Neither agree nor disagree (Boslaugh, 2012, P18-19).

3.5.2 Data analysis used in Chapter 7 and 8

The data from the voice recorders was transcribed verbatim by independent transcribers. The author (JGC) read each transcript to gain familiarisation with the data, and to gain an overview of the richness, depth and diversity of the data and to list key ideas and emergent and recurrent themes. Themes were checked independently. Express dictate digital software v5.16 was used to listen and re-listen to the anonymised data and compare this to the original transcript to allow a data cleaning process. Each transcript was analysed by the author, followed by a reanalysis conducted using the direct audio coding method available on NVivo 8. Thematic analysis was chosen using a bottom up, inductive approach due to its ability to produce a ‘thick description’ of the data set, whilst being easy and quick to apply to a large data set (Braun and Clarke, 2006). Traditionally, there were five phases of thematic analyses Braun and Clarke (2006). They propose a six-phase approach to thematic analysis, as illustrated in appendix 3. Their approach was applied in this study. This required familiarisation with the data, which involved reading and re-reading the transcripts. This was followed by the generation of initial codes. Once these codes were established, it was necessary to search for themes that were emerging from the codes. After the themes were established, they were then reviewed. These themes were read and re-read. The themes were then named by the researcher (JGC) culminating by writing the report (Braun and Clarke, 2006).

3.6 Conclusion

This chapter initially explained that each research study within the thesis contains a more in-depth description of the methodology and methods used in this thesis. However, the

current chapter outlined the methods commonly used in PEPAS research and provided an overview and justification of the methods chosen in this thesis. Additionally, justification was provided for the methods chosen for collecting data for each research foci. Furthermore, an explanation was provided as to why each analysis was chosen.

Table 2: Summary of methods used in this thesis

Research focus	Objective	Methods
Chapter 4 Research Study 1: Unravelling the Glasgow effect	To review the evidence on the Scotland effect with the aim to unravel the Glasgow effect and investigate the relationship between accumulative biopsychosocial stress, stress reactivity, and health behaviours—with specific reference to PA in adolescents.	Desktop literature review on the Scottish and Glasgow effect.
Chapter 5 Research Study2: Stress, self-perception and health behaviours	To investigate if there is a relationship between self-perception/stress and health behaviours such as diet, smoking, substance abuse and PA in adolescents?	Questionnaire based study involving quantitative data collection. With qualitative box at end. Purposive sample of 10 adolescents from 15-17 years old, who have experienced life changing stress and 10 as a control group who have not.
Chapter 6	To provide a background of qualitative studies conducted investigating the barriers and facilitators to PEPAS to put the literature into context for the studies contained in Chapter 7 and 8.	Desktop literature review on the barriers and facilitators to PEPAS.
Chapter 7 Research Study 3: What is young peoples' perception of health behaviours? Why may there be a link between low PA, poor health behaviours and this stress?	To explore adolescents' attitudes to health behaviours such as PEPAS and HWB. To determine which aspects of healthy living are important to them.	Qualitative study using focus groups to initially explore health behaviour. Thirty-two adolescents from 8 focus groups each with 4 participants. 12-13-year-old.
Chapter 9 Research Study 4: How can lifelong habits such as PA be forged more effectively?	To determine perceived barriers and facilitators adolescents (16 plus) have with regards to PA, exercise and sport using qualitative methods, therefore employing novel strategies.	Qualitative study using focus groups to determine perceived barriers and facilitators and to involve adolescents in new strategies. 24 participants, 19 female and 5 males over five focus groups. Mean age 17.36.
Chapter 10 and 11 Review and analyse the implications for practice.	Pulling together of findings and outlining of implications for theory and practice.	A chapter reviewing the findings followed by a reflective chapter aiming to consolidate the thesis and disseminate new ideas.

CHAPTER 4 – RESEARCH STUDY 1: UNRAVELLING THE GLASGOW EFFECT – THE RELATIONSHIP BETWEEN ACCUMULATIVE BIOPSYCHOSOCIAL STRESS, STRESS REACTIVITY AND SCOTLAND’S HEALTH PROBLEMS

Prologue to Chapter 4: Research study 1

Now that the methodological decision-making process has been considered, and in order to provide background, the details underpinning Scotland’s health problems shall be the topic of the first research study in this thesis.

4.1 Abstract

To date, multiple hypotheses have been proposed for the Scottish effect and, more specifically, Glasgow’s high mortality rate and the associated Glasgow effect. Previous authors have highlighted the improbability of a single factor as responsible for this effect with seventeen possible hypotheses presented (Gray, 2008; McCartney et al., 2011). These have ranged from socio-economic factors, lifestyle and cultural factors such as sectarianism, and political and economic factors. Although these may all be contributory factors to this paradox, the underpinning reasons for the observed effect remain relatively unexplained. In this paper, we suggest that the compounding effect of a unique blend of accumulating life stressors may predispose Scots, and particularly socially-disadvantaged Glaswegians, to a wide-range of health disorders. In short, a confluence of social, environmental, attitudinal and cultural stressors perhaps combines to negatively influence biological health. Future directions should consider the stress remediating role of PA, and

the problems presented by barriers to participation in PA and exercise during key transitional stages of life.

Keywords: Scottish effect, Glasgow effect, biopsychosocial stress, physical activity

4.2 Introduction

Since the 1950's, Scottish life expectancy has improved more slowly than in other comparably wealthy nations. Furthermore, 43% of adults are classified as chronically ill or disabled and, despite medical advances, all-cause mortality in younger age categories (15-44 years) remains non-declining at a rate of 142.4 deaths per 100,000 (Bromley and Shelton, 2010). In addition, current suicide rates are 50% higher than in 1968, (Whyte and Ajetunmobi, 2010) obesity is on the rise, and general levels of PA are diminishing (Scottish Government and Convention of Scottish Local Authorities, 2010). As a consequence of this poor health record, and mortality rates persistently higher than European averages, Scotland has been dubbed 'the sick man of Europe', and the phenomenon of these unexplained health disparities labelled the 'Scottish effect' (Bromley and Shelton, 2010; Shelton, 2009; Whyte and Ajetunmobi, 2010).

Interestingly, within Scotland, further divergent health disparities are apparent. The West of Scotland, and more specifically the Greater Glasgow area, demonstrate particularly pronounced levels of premature mortality and an increased incidence of negative health outcomes and behaviours appear disproportionately common (Whyte and Ajetunmobi, 2010).

Despite multiple suggested explanations for the Scottish effect, however, the phenomenon remains poorly understood and the underpinning drivers of the Scottish and Glasgow effects remain unclear. No single contributing factor appears to explain why Scotland, and Glasgow in particular, have different mortality patterns than the other UK cities of Liverpool and Manchester which are reported to suffer comparable deprivation (McCartney et al., 2011). Indeed, it has recently been suggested that, whilst behavioural, socioeconomic and physiological factors certainly contribute to the Scottish effect, that psycho-emotional distress may exert an even greater contributing influence (McCartney et al., 2011; McCartney et al., 2015; Stults-Kolehmainen and Sinha, 2014).

Accordingly, within this article we explore the potential drivers of the Scottish effect through the lens of an updated 21st century understanding of the impact, on multiple dimensions of health, of excessively accumulating life stress. We suggest that the Scottish effect, and its nested sub-effects, can be explained through the convergence of multiple stress-promoting phenomena all conspiring to expose the Scottish population to unusually high levels of accumulating life stressors. Finally, we suggest that this re-framing of the Scottish effect underlines a crucial, if sometimes overlooked, argument for PA promotion amongst populations exposed to elevated levels of accumulating life stress: in short, systematic exploitation of the stress moderating benefits of regular PA.

4.2.1 Scottish, Glasgow and East Glasgow effects: Nested health effects illustrating the consequences of accumulative multi-source stress

In the late 1980's a UK-wide report highlighted that premature mortality in Scotland was more severe than in England or Wales (Carstairs and Morris, 1989; Walsh et al., 2010b; Whynes, 2009.; Whynes, 2009). Although these higher mortality rates were initially attributed to higher levels of deprivation, more recent investigations suggested that these health inequalities were not fully explained by deprivation levels alone. This phenomenon, of elevated mortality levels without a clear origin, was subsequently labelled 'The Scottish Effect' (Carstairs and Morris, 1989; Walsh et al., 2010; Whynes, 2009.). Although socio-economic status, cultural factors and other health-related risk factors all undoubtedly contribute to this phenomenon, an explanation as to why these health inequalities are so pronounced, remains elusive (Gray, 2008; McCartney et al., 2011).

As stated in the introduction, this effect seems even more pronounced in certain areas. Like many British cities, Glasgow, Scotland's largest city, underwent severe deindustrialisation in the mid 1980's, representing the fastest industrial decline within the United Kingdom (MacInnes, 1994). This deindustrialisation was accompanied by increasing deprivation and some of the worst premature mortality rates in Europe.

More recently, however, Glasgow has experienced rapid reindustrialisation, and growing prosperity. Nevertheless, as illustrated by recent Medical Research Council findings, Glasgow's health profile remains inferior to the rest of the UK (Gray et al., 2012). This circumstance suggests that the recent prosperity shift has not been reflected in a

proportionally increasing health status (Hanlon et al., 2006) and that higher mortality rates are not explained by socio-economic deprivation alone (Walsh et al., 2010; Hanlon et al., 2006). Indeed, on analysing data from the recent Scottish health survey, a Scottish Government report suggested living in Glasgow was independently associated with poorer health outcomes and increased all-cause mortality (Landy et al., 2010). This phenomenon, a further health disparity nested within the Scottish effect, has been termed 'The Glasgow Effect' (Gray, 2008; Walsh et al., 2010). The evidence linking low socio-economic status with elevated stress markers illustrates a clear link to a range of illnesses abundant in the West of Scotland (McEwen, 2008). Additionally, elevated levels of conditions related to anxiety, myocardial infarction, obesity and high GHQ scores (signifying potential psychiatric disorders) have been shown to be prevalent regardless of socioeconomic status (Landy et al., 2010).

In fact, other studies seem to suggest that even greater challenges exist. Within the Greater Glasgow area, there appears a further nested disparity. This arises when an observed macro phenomenon, as evident in the Scotland effect is reflected on a more micro scale, as evident within the city of Glasgow. For example, males living in Bridgeton and Dennistoun have a life expectancy fifteen years lower than fellow Glaswegians residing, less than 5 miles away, in the more affluent Anniesland and Bearsden areas (Glasgow City Council Regeneration Team, 2011; Hanlon et al., 2006). Such inequalities are preserved across genders, with all-cause mortality rates ranging from 428 and 454 deaths per 100,000 for Anniesland and Bearsden, to 965 per 100,000 for Bridgeton and Dennistoun (Hanlon et al., 2006; National Records of Scotland, 2012). Notably, males from Dennistoun have only a 53% chance of

reaching their 65th birthday (National Records of Scotland, 2012). Accordingly, some communities within the Greater Glasgow area exhibit the highest national levels of all-cause mortality, whilst others demonstrate the lowest.

4.3 What is stress? What causes stress?

Fundamentally, the stress response is launched by a negative emotional state prompted by perceived ‘threat’. This change in emotional state instigates a change in the individual’s neuro-chemical profile which, in turn, drives an array of physical, emotional and psychological consequences evolutionarily designed to prepare the organism for evasive action (McEwen, 2005; McEwen, 2008). In essence, the stress response is an evolutionary embedded survival strategy, designed to prepare and protect the organism from imposed dangers. Accordingly, when life circumstances trigger an emotional response, such as anxiety or fear, neuro-chemicals are released to better enable the organism to remediate the source of emotional discomfort. Most famously, stress increases secretion of the neurotransmitter cortisol. Like other neurochemicals and hormones, cortisol exerts an array of context-dependent influences on behaviour: priming cognition, sharpening focus, increasing energy availability and damping pain sensations (Wirth, 2014). Elevated cortisol levels thus ready the brain and body for the evasive actions necessary to counter the source of perceived threat.

Crucially, however, excessive exposure to the corrosive effects of cortisol, and downstream neural correlates, exacerbates ‘wear and tear’ of the neural circuitry responsible for modulating stress reactivity, degrading the neural processing centres most intimately

involved in initiating and terminating stress responses and, in so doing, heightening future stress reactivity and further exacerbating wear and tear. This cycle of increasing reactivity and vulnerability to future stress exposures leads, ultimately, to accelerating functional decline. Consequently, excessive exposure to historical stress subjects individuals to the dual threat of heightened stress reactivity *and* a diminished capacity to efficiently regulate stress responses, raising susceptibility to future stress induced ‘damage’ (McEwen, 2005; McEwen, 2008; Wirth, 2014).

This downward spiral is a particularly powerful concomitant of our modern lifestyle. The stress response evolved to cope with the survival challenges encountered by our Palaeolithic ancestors. In contemporary 21st century contexts, however, where short-term physical threats are rare but long-term psycho-emotional pressures are many, prolonged activation of the stress response exposes our neuro-biological system to the corrosive effects of prolonged exposure to the stress response’s chemical cascade: long-term exposures which act to progressively degrade resilience to future stressors. Supporting this perspective is the rapidly expanding evidence illustrating excessive stress reactivity as a main contributor to many common 21st century ailments (Juster et al., 2010; McEwen and Sapolsky, 1995; McEwen, 1998).

The downward spiral and subsequent implications for health and wellbeing as a result of stress reactivity can be better understood when considering the stress response. The cognitive activation theory of stress (CATS) offers a psychobiological explanation for the relationship between health and stress. According to the CATS, an individual may feel stressed when

there is a discrepancy between their ‘set’ value (normal situation) and ‘real’ value (what is happening in reality). This discrepancy triggers a stress alarm (Eriksen and Ursin 2002; Ursin et al 2004). A crucial concept in this theory is the “expectancy” of the knowledge that an individual acquires when dealing with challenging situations. If an individual perceives themselves to have control and expects a desired outcome, then the stress alarm is not activated, therefore the stressors are not felt. However, if there is a lack of resources to cope with this ‘discrepancy’ the stress alarm is activated. In a health-based context “*ill-effects occur only when there is a lack of coping*” (Ursin et al,2004).

4.3.1 The individual experience: It's the stress response, not the stressor

A confounding barrier to understanding ‘stress’ is that the stress response may be launched in response to any life event. Crucially, it is important to note that the magnitude of the stress response is not solely dependent upon the magnitude of the stressor, but is heavily modulated by the individual’s sensitivity to the particular stress (Nabi et al., 2013). Furthermore, the health and behavioural consequences of accumulating stress are dependent on individual stress resilience. Individual sensitivity, in turn, is shaped by a broad coalition of innate genetic and pre-dispositional factors and is similarly heavily influenced by cultural and attitudinal factors forged by individual life history. Accordingly, our stress reactivity is shaped by a blend of genetic, behavioural (coping and health habits), historical (developmental experiences, prior stress exposures) factors, early life experiences and cultural attitudes (Juster et al., 2010; McEwen and Sapolsky, 1995).

Although high levels of stress, especially in early life, can serve to increase an individual's stress-resilience, if this stress is excessive or over-whelming, then early life stress can predispose the individual to a life-long vulnerability to future stressors (Juster et al., 2010). In simple terms, a lack of perceived self-efficacy in ability to cope with an imposed stressor entails that the negative impacts of that stressor are magnified. As a consequence, many of those exposed to high levels of trauma in early life, exhibit a lifelong predisposition to disproportionately excessive reactivity to imposed stress (Appleton et al., 2012). This reactivity exposes individuals to an increased likelihood of future stress-induced wear and tear, increased susceptibility to stress-related illnesses, and subsequently accelerating health decline. The health consequences of exposure to an excessively activated stress response are manifested in the increasing incidence of a host of 21st-century ailments such as obesity, cardiovascular disease and psychiatric disorders (Juster et al., 2010). Coping strategies for the aforementioned stress reactivity can be adapted from the Psychological Characteristics of Developing Excellence (PCDE) which are typically applied in a sporting context. For example, MacNamara et al., (2010) stressed the importance of applying a range of psychological skills which can be used not only in sport but as an aid to optimise personal development. The development and application of certain PCDE's may be relevant outwith the sporting context. For example, there is a growing body of evidence highlighting the use of imagery, goal setting and relaxation techniques as effective methods for reducing stress and anxiety that accompanies daily life and chronic illness (Varvogli and Darviri, 2011). To this end the application of PCDE's that involve motivation, relaxation techniques, imagery and the ability to cope under pressure (MacNamara et al., 2010) may prove useful in helping to blunt the stress response, particularly when combined with other strategies. Coping in this

context can be defined as the acquired expectancy that most responses lead to a positive result (Ursin et al., 2004).

4.4 Biopsychosocial stress and the Scottish effect: A storm of Scottish stressors

It seems apparent that low socio-economic status is an inherent pre-disposing factor to stress, accounting for a large proportion of the stress burden imposed on individuals. Nevertheless, there remain certain enigmatic stress modulating characteristics of life in Scotland, and specifically in Glasgow, which further add to the health-reducing toll of accumulative stress. For example, resistance to a healthy lifestyle may be endemic within Scottish culture (O'Brien et al., 2009). Certainly, there appears a cultural disinclination, particularly amongst males, to discuss, or engage in, positive health behaviours. As illustration, it has been suggested by O'Brien et al., (2009, p376) that Glaswegian males were '*motivated to align themselves to the kind of masculinity that was valorised by their peers in order to avoid feeling ostracised*', portraying an image of masculinity characterised by the adoption of risky health behaviours, such as competitive drinking and unhealthy diets, and an inherent resistance to the adoption of 'good' health practices (Sloan et al., 2009). Recent studies have similarly noted a 'macho' approach to health behaviours in Scottish men. In particular, many men considered discussion, or practice of good health behaviours, such as healthy dietary and exercise habits as feminine; whilst negative health behaviours, such as binge drinking were perceived as manly (O'Brien et al., 2009; Sloan et al., 2009). Similarly, Emslie et al., (2015) investigated the role of alcohol and other substances in identity construction amongst Scottish females and reported that many females from their focus group-based study were

proud of their ability to ‘handle their drink’ and ‘keep up with the lads’ banter’ when in mixed company. The authors referred to female stereotypes and concluded that their participants viewed excessive drinking as an escape from ‘traditional female roles’, such as caring for others. Whilst those with young children also referred to excessive drinking as a means of escaping ‘mummy duties’.

The suggestion that health inequalities in Scotland and more specifically, Glasgow, are directly dependent upon deprivation, offers a partial truth: but not explanatory closure. After controlling for deprivation, it seems apparent that the mortality disadvantage embedded within this phenomenon is worsening. Indeed, Scotland’s relative ranking in relation to younger working age mortality, compared to other European countries, has progressively worsened for both sexes over the last 55 years (Whyte and Ajetunmobi, 2010). Furthermore, many health-related indicators, such as psychological morbidity, death from all cancers, chronic liver disease, and inadequate dietary intake of fruit and vegetables seems pervasive across socio-economic Glaswegian groups (Whyte and Ajetunmobi, 2010).

Apart from socio-economic status, deprivation and social inequality, other biopsychosocial stress-inducing factors have previously been suggested as contributing to the Glasgow effect: for example, the social legacy of immigration, and the physical and the climatic environment (McCartney et al., 2011; Reid, 2009). Accordingly it seems clear that there is no simple, single causative factor to which the blame for the Scottish, and nested Glasgow, effects can be definitively attributed (Reid, 2009).

4.5 Unrelenting biopsychosocial stress and social health

The suggestion that apparently separate influencing factors can be understood within a unifying explanatory rubric of cumulative multi-source life stress, unites these factors within a single conceptual model. The biopsychosocial impact of multi-source stressors results in greater accumulative life stress, heightening the risk of stress-related negative health outcomes. The burden of this chronic stress is accompanied by culturally promoted changes in personal behaviours: such as increased incidence of smoking, disordered eating and drinking. Stress-inducing lifestyle behaviours, in turn, drive other stress-elevating conditions, such as poor quality sleep, increasing body mass index, reducing energy levels and reduced tendencies to engage in health-promoting PA behaviours (McEwen, 2008). In short, these factors interact in a downward spiral, adding momentum to an insidious vicious cycle of self-perpetuating stress whilst, simultaneously, activation of the stress response erodes stress resilience.

4.6 The search for an explanation

To date multiple hypotheses have been offered explaining the Scottish and Glasgow effects. A recent report identified seventeen possible hypotheses —ranging from socio-economic; cultural; political; genetic and climatic factors— before concluding:

There was clearly a large number of outstanding deductive hypotheses which could be investigated for their potential causal role in generating the mortality pattern in Scotland (Glasgow in particular). There remains room, however, for further inductive work into the divergence of Scottish mortality from the rest of Europe around 1950 (McCartney et al., 2011).

Against this backdrop, the cumulative effect of the multiple factors and their interaction may offer the most parsimonious explanation. Within medical domains a rapidly accumulating literature documents the role of excessively accumulating life ‘stress’ in driving a broad diversity of negative health outcomes: outcomes encompassing multiple —psychological, neurological, cognitive, social and emotional— dimensions of human function, across every segment of the lifespan (Carlsson et al., 2014; Everson-Rose and Lewis, 2005; Hackney, 2006). Previous literature has stated that the psychological and mental health aspects of the Glasgow’s excess mortality are largely under investigated (Fraser and George, 2015) .

Traumatic adversity —in childhood, middle-age or old-age— is linked to negative physical, mental and emotional health outcomes, across genders (Appleton et al., 2012). Similarly, it is well established that stressful circumstance in early life, such as growing up in impoverished or disadvantaged conditions, typically increases the likelihood of negative future health outcomes (Appleton et al., 2012). Indeed, recent evidence, illustrates that repetitive exposure to seemingly inconsequential stressors also exerts a toll on psychophysiological health (Aldwin et al., 2014). This expanding body of evidence suggests that the accumulation of apparently minor, but unremitting, stressors, such as frequent arguments with spouses, neighbours or simply watching others in stressful situations, has the potential to negatively impact multiple dimensions of health (Lippold et al., 2014; Stawski et al., 2013; Zoccola et al., 2014). In order to evaluate this suggestion, we firstly consider the mechanisms through which stress can impact such a wide spectrum of elements.

4.7 Simple solutions alleviating a complex problem?

Contextualising the Scottish effect as the insidious accumulation of relatively minor, but pervasive and persistent, stressors provides a conceptual model illuminating a previously incompletely explained phenomenon. Further, a shift in how the problem is conceptualised re-emphasises the remedial potential value of a certain simple, straight-forward and cost-effective strategies: PA. The rationale for promoting vigorous PA has traditionally focussed upon the well-established benefits to physical health (Cooper and Hancock, 2011).

However, in recent years, multiple strands of research have emerged demonstrating a positive relationship between PA and a range of emotional, cognitive and mental health capacities (Martikainen et al., 2013). For example, PA has been shown to exert large to moderate positive effects on depression, anxiety-related disorders, and Attention Deficit Hyperactivity Disorder (ADHD) (Dinas et al., 2011; Hoza et al., 2014). Similarly, vigorous exercise has been demonstrated to enhance various dimensions of emotional regulation such as mood, self-esteem, and impulse control (Chaddock et al., 2011; Davis et al., 2011; Voss et al., 2011). In addition, and perhaps critically, physical exercise serves to increase emotional resilience against stressors yet to be experienced (Smith, 2013). These potential benefits are well supported by available research. Cross-sectional studies illustrate that regular exercise is associated with enhanced wellbeing, exerting positive effects on mood and anxiety symptoms (Goodwin, 2003). Further, growing evidence reveals positive relationships between PA, physical fitness, selected measures of cognitive function and academic performance (Biddle et al., 2000). Of additional relevance, PA undertaken within natural environments —parks, woodlands, trails has been evidenced to provide an extra stress-reducing effect: potentially hinting at the benefits of exposure to natural scenery and

context more aligned with our shared evolutionary heritage (Aspinall et al., 2013; Tyrväinen et al., 2014).

4.8 Conclusion

There is a profound mismatch between the historical contexts, within which we evolved, and 21st century life as experienced in first world countries. The stress response, which originally evolved to protect us primarily from immediate short-term physical danger, is commonly activated in response to events —such as financial worries, work-related pressure or perceived low social status—, placing a heavy burden on human neuro-physiology. Chronic activation of the stress response, for non-life-threatening events, exposes the biological system to the corrosive consequences of repeated over-expression of the bio-chemistry originally designed to cope with short-term ‘threats’. In essence, it is not the magnitude of applied stressors driving many health problems, but the negative consequences of persistent exposure to toxic levels of elevated stress hormones (Sheridan et al., 2013). Negative health behaviours are a key driver of poor health. These behaviours may be culturally embedded as deep rooted beliefs, attitudes and perceptions: all factors conspiring to add to the cumulative stress burden to which individuals within that culture are exposed (Sheridan et al., 2013).

Despite the entwined social, cultural, geographical, genetic and personal history underpinning our vulnerabilities and resilience’s to accumulating life stress, and despite the expansive range of commonly suggested stress-remediating strategies, PA offers perhaps the most flexible, cheapest, readily accessible and logistically feasible evidence-led means of countering the negative stress-related consequences of our otherwise privileged position as

citizens of first world 21st century life. The potential bi-directional relationship between PA and stress resilience further underscores the criticality of embedding early life-long PA habits, especially in populations at heightened risk of stress-related health impediments (Stults-Kolehmainen and Sinha, 2014). PE and Physical Educators consequently fulfil a crucial role in fostering the positive culture change, associated with ensuring sustainable PA during the important transitional phases of adolescence.

Within this paper, I have employed the Scottish effect as a lens through which to contextualize the root cause of many 21st century health problems: accumulating and unremediated multi-source life stress. However, this problem is certainly not exclusive to Scotland, and in fact is a pervasively growing first world problem. Nevertheless, the Scottish population, for the range of reasons highlighted here, does seem particularly vulnerable to the spectrum of modern stress-related health issues. Given that Scotland has a deep-rooted culture of obesity and low PA levels, it is evident that these issues need to be addressed in order to become a more active and healthy population. This confluence of stress-inducing factors, coupled with traditionally low levels of PA, are especially damaging for those living in socially disadvantaged communities.

What this study adds

- *I proposed that a unique blend of compounding stressors predispose Scots/Glaswegians to a wide range of health disorders (cultural stress).*
- *A confluence of social, environmental, attitudinal and cultural stressors negatively effects health and contributes to the Glasgow effect.*
- *Resistance to a healthy lifestyle may be endemic to Scottish culture.*
- *PA offers the most flexible, cheapest logistically feasible methods for counteracting the nation's problems.*
- *Educators and PE staff play a crucial role in fostering positive culture change to help counteract cultural stressors and establish habits for life.*

What is the novel element of this study?

This study presents the crucial role of physical educators in fostering positive cultural change through a holistic approach to embed lifelong habits.

Figure 1: Summary of Research Study 1

CHAPTER 5 - RESEARCH STUDY 2: IS THERE A LINK BETWEEN SELF-PERCEIVED STRESS AND PA LEVELS IN SCOTTISH ADOLESCENTS?

Prologue to Chapter 5: Background

The previous chapter identified key factors associated with the compromised health status of sections of the Scottish population, with specific focus on those living in the Glasgow area. The unifying theory proposed within the previous chapters suggests that multi-source stress plays a mediating role in health inequalities. The potential negative impact of this stress on segments of the Scottish population suggests that Scot's may be subjected to a unique set of stress predisposing factors. Factors subsequently increasing risk of illness and disability. Furthermore, it was proposed that this unifying theory may contribute to a recurring cycle of poor health behaviours, and act to reduce levels of PA.

This study placed special emphasis on the developing adolescent, and how life stressors may influence health in negative way and eventually lead to negative health outcomes. This is critically important when considering that the role of heightened stress reactivity, to relatively minor daily events, has been linked to a range of common debilitating health outcomes. Adults who react disproportionately to small scale daily stressors leave themselves vulnerable to a series of long term health complications (Piazza et al., 2013).

This can be demonstrated when considering the CATS theory which emphasises that the stress response depends on acquired expectancies to the outcome of the stimulus.

Additionally, if the individual cannot cope with the stress response over a sustained period there may be a risk of illness and disease (Ursin et al,2004). This is also evident in younger

individuals. For example, children who show greater levels of stress reactivity are more likely to become obese than their calmer peers (Francis et al., 2013). Independent of Body Mass Index (BMI), high stress levels in adolescents has been found to be a predictor of low levels of PA in 10th grade students in the USA (Reynolds et al., 1990). The study is specifically concentrated in Scotland, the area of my professional domain.

5.1 Abstract

Purpose: Accumulating life stress is a driving factor underlying the most pervasive, incapacitating health conditions in 21st century, First-World societies. The most widely supported strategy, for remediating the negative health consequences of elevated life stress, is PA Evidence also suggests accumulating life stress impedes PA uptake. Thus, ironically, persistently elevated life stress not only negatively impacts multiple dimensions of health, simultaneously it may also reduce likelihood of participation in the most effective remediating strategy, PA.

This study sought to compare patterns of PA uptake in adolescents of low socioeconomic status (SES) backgrounds, a significant risk factor for elevated biopsychosocial stress, with more affluent age-matched peers. Related health behaviours such as smoking, and alcohol consumption were also analysed.

Methods: PA patterns were determined using ‘Physical Activity Questionnaire for High School (PAQA). Stress scores were assessed using the 10-item perceived stress scale (PSS-10).

Results: PA scores were significantly different between groups ($p < 0.05$). Low SES participants were significantly less active every day ($p < 0.05$), excepting Saturdays ($U = 31.0$, $Z = -1.594$, $p = > 0.05$). Spearman's correlation demonstrated a negative, inverse relationship between total stress and PA during spare time ($r_s = -0.61$, $n = 10$, $p = < 0.05$).

Conclusion: These findings add to mounting evidence suggesting excessively accumulating life stress, not only diminishes health, but simultaneously reduces PA uptake in vulnerable populations. Thereby highlighting the negative relationship between excess stress and PA and the possibility of a bidirectional relationship between stress and PA. These findings support proposals that conventional PE practice should be re-framed to not only provide PA during school years, but to promote lifelong interest in PA

Keywords: adolescents; exercise; physical education; physical activity; stress

5.2 Introduction- The negative effect of stress on PA

The benefits of PA and its effect on associated health outcomes are strong and well documented (Cooper and Hancock, 2011). Despite the overwhelming evidence of the benefits of PA and exercise, however, adherence to these behaviours remains problematic. For example, the Scottish Health survey in 2012 indicated that only 39% of adults (45% of men, 33% of women) met the PA guidelines of 30 minutes of moderate activity on five or more days per week. Furthermore, since 2008 there had been no significant changes in the proportion of adults meeting these recommendations (The Scottish Government, 2012).

The PA practice of the Scottish population is of even greater importance, when considering reported health inequalities. The ‘Glasgow effect’, for example, is the term relating to specifically elevated levels of mortality in the Glasgow area, which when compared to other UK cities with similar levels of deprivation, remain unexplained² (McCartney et al., 2011). Accordingly, the need for research into the underpinning causes of low levels of PA seems pressing, especially when considering that 60% of young people will not participate in PA post compulsory education: a phenomenon labelled the post 16 gap (National Institute for Health and Clinical Excellence 2007).

Increasingly, current mental health concerns illustrate that additional PA benefits are relevant, as it is widely recognised that exercise has a positive effect on mental health outcomes (Bradford, 2016; Hamer et al., 2009; Lutz et al., 2010). Perceived levels of wellbeing are not only greater in the physically active, perceived stress levels are also lower, thereby perpetuating positive spirals of improvement. In association, recent evidence highlights that childhood stress in 5-10-year olds is positively related to increases in BMI and waist-to-height ratio’s. Subsequently highlighting the additive negative impacts of multiple poor lifestyle behaviours, such as low sleep duration, increased electronic screen time, consumption of high calorie snacks and accumulating life stress, on increased fat storage children (Vanaelst et al., 2014). Further evidence is provided by a

² Recently, in 2017, the research team at the Glasgow centre for population health asked others to refrain from the negative term ‘Glasgow effect’ Instead they asked for to reference the term ‘excess mortality’.

longitudinal study, conducted on 312 children aged 5-12, which reported that stress stimulated calorie intake, in the absence of hunger, thereby expediting weight gain. Additionally PA, as measured by accelerometers, increased in those with higher stress levels, suggesting that PA increased as a coping mechanism (Michels et al., 2015). In contrast, quality of life, diet and PA measures, of 291 Swiss children (aged 3-6), illustrated that stress decreased PA levels, whilst simultaneously increasing consumption of high fat foods (Michels et al., 2016).

Certainly, the extant literature suggests excessive life stress impedes participation in PA (Lutz et al., 2010). Furthermore, the relationship between stress and PA are suggested to be bidirectional (Stults-Kolehmainen and Sinha, 2014) regular PA reduces the negative consequences of stress, and less stressed people tend to more regularly participate in PA.

Despite these described benefits, however, evidence demonstrating the influence of stress on lifestyle behaviours and their link to obesity and physical health remains limited. The bulk of this evidence focusses on the positive effects of PA in blunting excessive stress reactivity (Stults-Kolehmainen and Sinha, 2014). In this regard, Salmon (2001) suggests that exercise may produce neurochemical changes reducing depression and anxiety, thereby moderating reactivity to future stress (Salmon, 2001). In addition, one recent review has highlighted evidence suggesting that experiencing stress may result in the individual becoming less physically active in the future (Stults-Kolehmainen & Sinha, 2014).

The possible bidirectional nature of stress when associated with PA and, ultimately, its positive effect on health outcomes, places PA firmly in the frontline of the fight against the spectrum of ailments related to physical inactivity. Nevertheless, there remains a paucity of evidence investigating the effects of stress on the uptake of PA (Stults-Kolehmainen and Sinha, 2014; Holmes et al., 2010).

5.3 Increasing PA in adolescents

Adolescence is recognised as a critical time for instilling positive health behaviours such as PA (Pearson et al., 2009). Additionally, increasing PA levels in adolescents has been shown to reduce somatic complaints in a European sample (Ferron et al., 1999). In contrast, the Swiss adolescent health survey reported that adolescents with lower levels of sports-based activities were more likely to adopt negative experimental behaviours, such as smoking cigarettes and marijuana, and increased risk-taking behaviours, such as not wearing a car seat belt (Ferron et al., 1999). This survey suggested PA as a potent component of any comprehensive strategy aimed at reducing negative health behaviours among adolescents.

Additionally, further evidence suggests that active young people, deemed as athletic, are better inclined to maintain health status at a satisfying level and are better prepared to cope with potential health problems (Ferron et al., 1999) In fact, even small amounts of structured activity outside of school hours has demonstrated positive improvements in the emotional well-being of adolescents.

5.4 The importance of life changing events and changes in PA

Lifestyle upheaval, such as changing or leaving school or employment, may significantly influence an individual's daily routine and elevate background levels of psychosocial stress (Engberg, 2010) thereby exerting a negative impact on PA levels in adulthood (Allender et al., 2006). Changes in employment status, residence, perceived physical appearance, relationships and in family structure are all common life events serving to raise background levels of psychosocial stress in adolescent age groups (Allender et al., 2008; Allender et al., 2006).

There is good evidence illustrating the impact of these transitions. Systematic reviews of qualitative and quantitative research investigating barriers and motivations to PA report that many life changing events exerted a negative effect on participation in PA levels with the most common changes experienced at the transition phase from adolescence to adulthood, the time when the cessation of compulsory education approaches (Allender et al., 2006; Allender et al., 2008). A period of life which, as already noted, is a critical time for establishing lifelong health habits. Indeed, the literature has illustrated that a shift in life course, particularly between ages 15-16, has implications for participation in future PA.

Notably, the overall ideology behind the CfE in Scotland is to optimise lifelong health, wellbeing and create opportunities for lifelong PA and learning (Niven et al., 2009; The Scottish Government, 2009). To date, the extant literature highlights the need for emphasising the importance of quality PE with less emphasis on traditional games based drills and more on sustainable, enjoyable activity to ensure the maintenance of PA into

adulthood (Kirk, 2005; Fairclough et al., 2002). Furthermore, the need for pupil input and student voice is considered critical to promote sustainable PE and PA.

The move away from controlling, temporary forms of motivation can be supported by a culture where teachers listen to and then act upon what pupils have to say about their physical education experiences, alternative provision that has the capacity to promote autonomous, more enduring forms of motivation in those female and male pupils who do not enjoy games (Forsyth, 2014).

Finally, while previous authors have identified the importance of stress and the effect this has on health behaviours but the failure to identify specific dimensions of stress and the paucity of evidence focussing on a narrower focus on parameters such as PA has deemed it necessary to investigate the effects stress may have on behaviours such as PA (Pampel et al., 2010).

5.4.1 Research aims

To add to this growing body of knowledge, this paper focussed on identifying if there were significant differences in PA participation between adolescents who had experienced high life stress, in comparison to those who had not.

5.5 Methods

5.5.1 Recruitment and Participants

The study aimed to recruit adolescents around the age of 16, a period previously defined as the end of broad general education in Scotland. The aim was to target individuals from areas of moderate to higher deprivation in the Greater Glasgow health board area and compare them with those from the least deprived areas in that area (as detailed below).

These individuals could either be in the fifth or sixth year of secondary school or have left school and in work, apprenticeship, further education or unemployed. Those who attended full time education courses that involved Sport and Recreation, or Sporting Activity were excluded, due to the excessive amount of PA involved on these courses (16 + hours weekly). Recruitment strategies comprised of visits to Further Education college outreach centres arranged through contacts established from the author's previous employment and via the cooperation of several school's liaison managers who work on the transition of young people from school to further education. A purposive sampling strategy was employed, with participants recruited on the basis of socioeconomic factors and characteristics using the Scottish Index of Multiple Deprivation (SIMD) as guidance. The recruitment aim for those in 'group one' was to target young people from the Greater Glasgow Health Board who lived in the most deprived 15 % of SIMD. The aim of recruitment for group 2 was to recruit young people from an area of low deprivation in the least deprived SIMD.

Twenty participants (mean age 16.1, $SD \pm .31$) were recruited for this study. Group one consisted of 10 individuals from the PA3, G32 and G40 postcodes in Glasgow; an underprivileged area with low income and poor health outcomes. Group 2 consisted of 10 participants matched on age and sex, drawn from the postcodes G67 and G68 a background that was not deemed to be underprivileged.

5.5.2 Instrumentation

The study used validated questionnaires to measure self-perceived stress and PA, then subsequently analysed the relationship that may exist between stress and health behaviours such as PA, smoking, poor diet and substance misuse. The validated questionnaire 'Perceived Stress Scale for Adolescents was used for data collection, as this instrument has been shown to be a useful measure for detecting the relationship between stress and other health related measures (Cohen and Williamson, 1988). PA patterns were measured using the modified version of the questionnaire Physical Activity Questionnaire for High School (PAQA - (Kowalski et al., 1997) which is a seven day self-administered recall questionnaire deemed valid and reliable for adolescents of 14-17 years of age. Other health behaviours such as smoking, and substance misuse were collected using both quantitative and an open qualitative comments box in the questionnaire.

5.5.3 Procedure

Ethics were sought and received from the University of Central Lancashire Ethics Committee. Informed consent was sought, and a briefing sheet provided for all participants informing them of the nature of the study and the option to opt out at any time. All provided informed consent, with counter signatures provided by their parent or guardian where necessary. Data were collected through use of the various instruments, administered personally by the first author, and then analysed using SPSS v20 (Armonk, NY: IBM Corp). Independent sample t tests were used when the data followed a normal distribution. This included age and total stress scores. Non-parametric tests in the form of Mann-Whitney *U* test were used when the data were skewed, to analyse the difference between

the two independent groups. Additionally, Spearman's rank correlation was carried out to analyse the strength of the correlation between total PA scores and total stress scores for each group respectively.

5.6 Results

The first step was to ensure the appropriate equivalence and differences between the two sample groups. There was no significant difference in age ($p > .05$). In contrast, a significant difference was detected in total stress score against a possible ceiling of 40 with Group 1 showing a total of 34.3 ($SD \pm 4.72$), whilst Group 2 displayed a total of 18.6 ($SD \pm 3.94$, $p < 0.05$).

Table 3: shows Mann- Whitney values for PA scores, level of smoking and drinking over a seven days period.

PA on:	Mann Whitney	Wilcoxon W	Z Value	Asymp. Sig. (2 tailed)	Exact Sig.
Mon	7.000	62.000	-3.401	0.001	0.000*
Tue	0.000	55.000	-3.907	0.000	0.000*
Wed	3.000	58.000	-3.821	0.000	0.000*
Thu	17.500	72.500	-2.784	0.005	0.011*
Fri	18.000	73.000	-2.749	0.006	0.015*
Sat	31.000	86.000	-1.594	0.111	0.165
Sun	12.500	67.500	-2.999	0.003	0.003*
Smoke	15.000	70.000	-3.067	0.002	0.007*
Drink	30.000	85.000	-1.780	0.075	0.143

*P<0.05

Next, I checked for between group differences in PA, smoking and drinking; these data are presented in Table3. As shown, total PA scores were significantly different ($p < 0.05$), with the low SES group significantly less active on every day except for Saturday.-The low SES adolescent group also showed a significantly higher number of smokers in comparison to

the non-SES group. However, as shown in Table 3 there was no significant difference in the levels of drinking evident between groups.

To examine relationships between stress and PA across individuals, Spearman's correlation was conducted to determine the relationship between the total stress score and PA during spare time, during PE, immediately after school, evenings weekends and total perceived PA levels. In the low SES group, there was a strong negative relationship between total stress levels and PA during spare time ($r_s = -0.61$, $p < 0.05$). A similar relationship was evident for: PA levels during lunchtime, ($r_s = -0.69$, $p < 0.05$), during evenings ($r_s = -0.57$, $p < 0.05$) and for overall PA over a seven-day period ($r_s = -0.81$, $p < 0.05$). However, no relationship was evident between the reported participation levels during PE lessons and the total stress scores ($r_s = 0.30$, $p = > 0.05$). In contrast, no significant relationships between total stress level and PA were evident in the control group, across all variables ($p = > 0.05$).

5.7 Discussion

The aim of this study was to determine if there was a difference in PA levels between those that had experienced greater biopsychosocial life stress as compared with those that have not. The acknowledgement that greater stress levels have an effect on PA levels and structured exercise programmes in all but long term exercisers is of particular interest to us, as we believe that stress may play a synergistic role in the lives of those individuals typified by the Glasgow effect (Lutz et al., 2010).

5.7.1 Physical activity

Whilst it is regularly acknowledged that PA plays a role in repelling the negative effects of stress, there is a lack of evidence as to how this stress effects the levels of PA. The findings from this study illustrate a negative relationship between perceived stress and PA, with lower levels of PA evident in those young people who have experienced, or are experiencing, elevated levels of perceived stress.

This evidence suggests a negative relationship between high total stress scores and levels of PA. This relationship was statistically significant for PA recall during lunch periods, immediately after school and over a seven-day period. Whilst methodological limitations are evident in PA recall, this study adds to the limited body of existing evidence supporting the negative interplay between of PA and stress (Stults-Kolehmainen and Sinha, 2014; Lutz et al., 2010; Holmes et al., 2010). Furthermore, the findings confirm the effects of excess stress on health behaviours, such as PA during transitional phases of life (Allender et al., 2006; Allender et al., 2008).

Interestingly, whilst the results highlight a significant difference between groups for participation during PE classes, with the control group significantly more active than the low SES group, there is no significant association, either positive or negative, to suggest that PE class participation is affected by those who scored either high or low in the administered questionnaire. This may highlight the effectiveness of compulsory PE in ensuring that short-term PA guidelines are met. More concerning, however, although data suggest that those with higher stress scores are likely to reach their peak levels of PA

during PE lessons, traditional methods of teaching PE may be ineffective in promoting lifelong PA, typically exhibiting a very weak transfer of learning from school PE to adult life (Casey and Goodyear, 2015). This circumstance may be attributable to PE's traditional overreliance on sport based drills to improve skill, with less emphasis on fun, enjoyment, leisure and inclusion. Accordingly it has been suggested that an updated holistic model based approach (see Goodyear, 2016 for more details, and Fig 6 in this thesis) is preferable to ensure effective promotion of lifelong PA (Fairclough et al., 2002; Kirk, 2013a; Casey and Goodyear, 2015).

These data also highlight the importance of continuing PA beyond the school aged years into adult life. Previous authors have identified that PE should be seen as a vehicle to educate pupils on the need to sustain PA throughout life (Kirk,2005; Kirk 2013b). A position suggesting that a special emphasis on recreational and leisure based content might be more beneficial over the life-span, than standard sports-based PA that is conventionally seen as a 'must do', or compulsory element of the curriculum (Kirk, 2005; Kirk, 2013a). In this regard, Fairclough, Stratton and Baldwin (2002) emphasise that physical educators must recognise which activities have the greatest potential for 'carry-over' value into adult life (Fairclough et al., 2002). Additionally, the implementation of PE models which focus on developing skills at the critical early stages of development are imperative (Giblin et al., 2014b; MacNamara et al., 2015). There is also a real need for research to examine which aspects of PE, and when in the child's life, are most effective at promoting lifelong PA (MacNamara et al., 2015).

5.7.2 Drinking and smoking

It has been established that, for those from areas of lower socio-economic status, the behaviours of smoking and drinking are more pronounced, with heavier patterns of use observed. Of course, it must be acknowledged that poor dietary habits, alcohol, tobacco consumption and recreational drug-use habits are widespread across all social classes. The results showed a significant between group differences in the number of participants who smoke cigarettes. However, between groups there was no difference in the number of participants who consumed alcohol, over a seven-day period. This may be down to the low sample size or, perhaps more likely, to be down to the ‘acceptability’ of alcohol in youngsters’ lives today (Seaman and Ikegwonu, 2010).

5.8 Limitations

Results notwithstanding, the limitations of the study should be acknowledged. One limitation relates to the low sample size, however, as a significant association was found it is important to clarify that a larger confirmatory study may be needed to strengthen these findings. Nevertheless, this was out with the allocatable resources of this project. PA measurement using questionnaires may result in recall bias, as participants may find it difficult to accurately evaluate their activity patterns retrospectively. Furthermore, research questionnaires such as the PAAQ-A may not accurately evaluate the intensity of the PA. Notably, the literature validating the questionnaire used in this study have supported its use for assessing general PA levels for the purpose seen in this study as a reliable estimate of PA levels, (Kowalski et al., 2004). Additionally a modified version of the questionnaire has

been previously used on a large cohort of primary and secondary aged school children in Scottish schools, with emphasis on this transitional period (Inchley et al., 2008).

5.9 Conclusions and implications for future practice

The main objectives of this study were to determine if there is a significant difference in uptake of PA between adolescents who have experienced high life stress, in comparison to those who have not. Whilst also considering the role that the PE curriculum may play in facilitating uptake when considering stressful outcomes. PA levels were shown to significantly differ in those adolescents who displayed high stress scores when compared their peers who had been subjected to less accumulative life stress. The findings presented here, add to the evidence-base illustrating that prior stress impedes PA uptake in those at the end of compulsory education (16 years plus) focussed on in this study.

This study placed special emphasis on the developing adolescent and how life stressors can negatively influence health behaviours, which may eventually lead to negative health outcomes. Effective uptake of PA is reliant, not only upon participation in PA through PE, but also on providing young people with a well-rounded sampling of PA experiences, beyond simply those considered as traditional PE-based games. Physical Educators should understand the stress remediating effects of PA, and strive to incorporate more activities that have a ‘carry over value’ in to adulthood to promote sustainable PA. Furthermore, those involved in designing the curriculum should strive to provide a positive, inclusive experience for everyone with the emphasis on a task climate, rather than an overemphasis on determined ‘winning’ (Kirk, 2005). Contemporary trends in research tend to focus on

the amount of time spent being physically active in classes or at that time of life. More importantly, however, there should be a structured curriculum content prioritising sustainable PA for life, rather than placing sole emphasis on the current level of PA in the young participant (Casey and Goodyear, 2015; Green, 2004).

What this study adds

- *PA levels were shown to significantly differ in those adolescents who displayed high stress scores when compared their peers who had been subjected to less accumulative life stress.*
- *These findings add to existing evidence suggesting stress, during adolescent transition periods, impedes PA uptake.*
- *This study confirms the negative and possible bidirectional relationship between PA and perceived stress.*

What is the novel element of this study?

This study placed special emphasis on the developing adolescent and how life stressors can negatively influence health behaviours, which may eventually lead to negative health outcomes. This has implications for physical educators.

Figure 2: Summary of Research Study 2

CHAPTER 6 - A NARRATIVE REVIEW OF UK QUALITATIVE STUDIES INTO THE BARRIERS AND FACILITATORS OF PEPAS

Prologue

The previous chapters suggest there is a negative relationship between PA levels and excess life stress. Furthermore, those who had experienced greater life stressors, were more likely to adopt unhealthy behaviours than those who had not. The potential implications, on the future health of the nation, are particularly important in relation to adolescent health.

Following the conclusions of the preceding chapters, I deemed it necessary to investigate, on a qualitative level, the underpinning issues which make young Scottish people ‘tick’. In short: what were their perceptions of PEPAS and healthy living?

Similarly, there is an evident related need to examine the barriers and facilitators facing both phases of CfE, and specifically those aged 12-15 years of age and those at the senior phase of CfE, aged 16-18. Prior to this, however, I felt it beneficial to conduct a narrative review to explore the role of PEPAS in Scottish schools and gather current insights into the barriers and facilitators directly relating to PEPAS and health and wellbeing in its broader context.

6.1 Introduction

The primary aim of this chapter is to review the qualitative literature surrounding the barriers and facilitators to PEPAS and exercise in UK adolescents. Whilst the majority of

studies have been conducted in secondary schools, several community based studies are also reviewed. The criteria for the review is outlined in the methods section and serves to provide background for Chapters 7 and 8.

PA and exercise participation barriers during transitional stages of life have previously been identified as critical influences on lifestyle (Cooper and Hancock, 2011). Additionally, adolescence presents a critical time for establishing health behaviours such as PA (Pearson, 2009). Schools play a major role in promoting healthy lifestyles and lifelong PA, however many initiatives targeting school-goers may be counterproductive due to potentially ill-informed strategies placing, at their centre, issues such as childhood obesity (Kirk, 2006). This has led to a common misrepresentation of PE as primarily sports based activity serving to increase short term PA. However, such short-term solutions do little to prepare pupils for lifelong PA, which is viewed by Kirk (2013 b) and Capel and Whitehead (2013) as PE's ultimate 'raison d'être'.

6.1.1 The role of school PE

Accepting the need for a more holistic approach to PE and health and wellbeing, the new CfE in Scottish education has prioritised health and wellbeing as a core component of learning in schools (The Scottish Government, 2009). It has been argued that the role of PE, and the focus on schools to promote PA within the curriculum, masks the complexity of addressing the health and wellbeing issues of the nation (Horrell et al., 2012). Furthermore, with the implementation of CfE, PE was categorised under the health and wellbeing area of the curriculum, having previously been labelled as an expressive art. As an aside: the health

and wellbeing concepts promoted by the Scottish Government (2014) initiated a national approach entitled “Getting it Right for Every Child”, in order to ensure a multi-agency, child centred approach to every child’s wellbeing. In response to the PE review group (PERG) administered by the previous Scottish Executive, the Minister of Education pledged that the CFE programme would ensure sufficient flexibility in the curriculum to allow schools to accommodate provision of least 2 hours of good quality PE for each child every week. Additionally, Secondary schools were to deliver at least two PE periods up to S4 (The Scottish Government (Scottish Executive), 2006).

6.1.2 The physical education review group

The initial report by the PERG suggested that offering alternative curriculum activities, moving away from a ‘traditional games approach’, was part of the solution to engaging more individuals in PE. A strategy which, it was also hoped, would enhance sustainability of activities into adulthood.

Changing the content of the curriculum and adding more choice is seen as one method of engaging young people. Others, however, have looked deeper into alternative teaching strategies and the development of physical literacy, movement confidence and competence, which has been suggested to increase the likelihood of lifelong PA participation (Jess and Collins, 2003; MacNamara et al., 2015; The Scottish Government (Scottish Executive), 2006). Whilst it is evident that the traditional approach has not been entirely successful in facilitating pupil motivation to engage in PE.

The development of an innovative models-based practice (MBP) approach to PE holds the potential for multiple —psychomotor, social, affective, and cognitive— health benefits, and has been suggested to increase participation by increasing intrinsic motivation amongst pupils (Kirk 2013b). One theory, namely the self determination theory developed by Deci & Ryan (1985; 2002) suggests that intrinsic motivation can be promoted through autonomy, relatedness and competence. It has been proposed that the use of MBP addresses these needs by increasing perceived competence and therefore actual competence, which has been reported to be a strong predictor of future engagement in PEPAS (Giblin et al 2014 a; Kirk 2013b). Additionally, MBP involves pupil centred teaching strategies with an element of choice, therefore promoting autonomy for each learner. The promotion of inclusive learning groups and the creation of strong bonds with both the teacher and classmates ensure a feeling of relatedness with each learner feeling accepted by the others, within the context of a positive, supportive social environment (Gray et al., 2018).

Indeed, the recent literature suggests that attending to the above mentioned outcomes strongly influences the likelihood that students will engage in a physically active lifestyle (Fletcher and Casey, 2014; Bailey et al., 2009a). Importantly, McGrane et al (2016) highlighted the importance of the relationship between skill proficiency and self confidence in influencing PA levels throughout life. Nevertheless, despite this, PE is often seen as a short-term preventative health measure, contributing to PA accumulation rather than developing movement confidence. Consequently ignoring, or at least devaluing, the potential positive influence that PE can have on lifelong daily activity levels throughout the lifespan (McGrane et al., 2016; Pill, 2017). Although the terms PE and PA are often

confused it is important to understand their differences (see page xiii for greater detail) and inter-relationship. PE is defined by Education Scotland as a “programme of activities that aims to provide young people with learning experiences enabling them to develop the knowledge, motivation and ability to lead a physically active life”. Whilst PA is defined “as any physical movement that requires energy” (Education Scotland, 2018). Consequently, PE is a curriculum subject that includes the behaviour of PA as a context and means for learning, and one which emphasises learning experiences that empower pupils to gain the knowledge, motivation and competence to lead physically active lives (Education Scotland, 2018; The Scottish Government, 2005 a).

6.2 PE targets and PE content

Previously, Gray and colleagues (2008), explored pupils’ perception of team invasion games and highlighted the importance of games in the Scottish curriculum. However, their findings emphasised that pupils in P7 valued team invasion games, more highly than those in S4. This was associated with their perceived competence and enjoyment of team invasion games (Gray et al., 2008). Following this report, the newly formed Scottish Government, reiterated their pledge to deliver the required Core PE which focusses on the Broad General Education phase from primary schools through to S1-S4 in secondary schools. In addition, the newly implemented CfE emphasised the suggested requirement of at least 60 minutes of accumulative PA daily, in addition to planned PE. This initiative was backed by the newly devised Take Life On campaign. Delivery of the Scottish Government’s commitment on 2 hours of PE in primary schools, and 2 periods in S1 to S4 is measured annually through the Healthy Living Survey (The Scottish Government,

2005b). The Healthy Living Survey results (2013) outlined that 89% of schools were meeting targeted PE levels, up from 85% in 2012, and from under 10% in 2004/05. Similarly, updated figures show an increasing trend for 2016, with 98% of all primary and secondary schools meeting the target level of PE provision, the same as in 2015. In primary, 99% of schools were providing at least 120 minutes of PE to all pupils. However, on closer analysis of the new datasets, no figures exist outlining the participation levels of those in the senior phase of schools in S5 and S6 (The Scottish Government, 2005b). This suggests that there may be a need to focus on those within the Post 16 age group. This subsequently is one of the major focuses of this thesis.

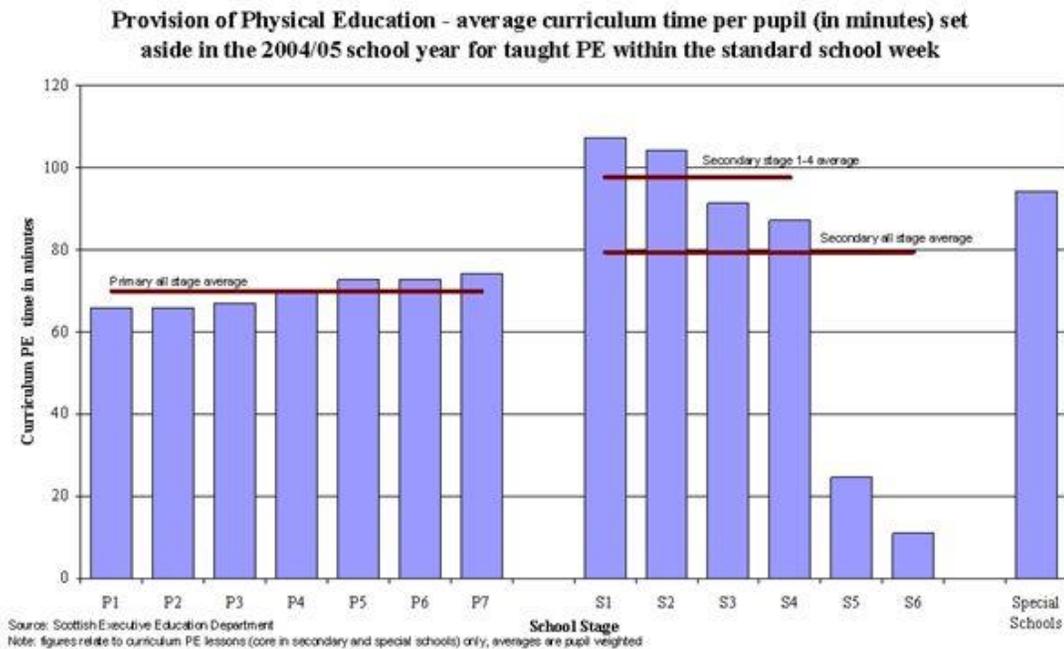


Figure 3: Provision of PE in 2005 (The Scottish Government, 2005b).

6.3 A Scottish health context

It is estimated that in the UK 60% of young people will not participate in structured PA post compulsory education, a phenomenon labelled the post 16 gap (Honeybourne et al., 2004). Similarly, recent UK governmental and youth sport trust reports have highlighted a steep decline in participation in activities as individuals approach 16 years old. In a Scottish context, in 2012, only 39% of adults (45% of men, 33% of women) met the PA guidelines of 30 minutes of moderate activity on five or more days per week (The Scottish Government, 2012).

In 2014, just over three quarters of children aged 2-15 met the guidelines of 60 minutes or more of PA per day. Whilst 63% of adults were active at the recommended level of 150 minutes of moderate or 75 minutes of vigorous activity per week. However, these figures depend on the methodology and classification of PA. For example, the Active Healthy Kids report card was devised as part of an international collaboration of academics aiming to improve surveillance of PA, facilitate international comparisons, and encourage evidence-based policy (Reilly et al., 2016). However, in response to media reports on the statistics released from the report card, the public health minister for Scotland, Aileen Campbell stated that “we have concerns over some of the methodology used in calculating physical activity levels within this report card, but welcome the acknowledgement that Scotland has excellent facilities and infrastructure for PA” (Bews,2016). The report showed that only 21% of boys and 15% of girls in Scotland met the Scottish, UK, and international recommendation of at least 60 minutes of daily PA of at least moderate

intensity (Reilly et al., 2016). Moreover, it is evident that around the ages of 15, PA levels decline. Additionally, for those still attending school, PE levels also fall post 16. The data initially collected for the Scottish Executive's PE review group highlighted that 12% of S6 pupils participate in core PE, whilst only 6% achieve 90 minutes. Despite this there is a paucity of Scottish-specific evidence relating to 16-18 years olds.

Historically, PE had a distinct focus on health. However, the work of Wood and Cassidy (1927) highlighted that this was detrimental to the holistic development of the child which ultimately led to the implementation of fundamental movements with an emphasis on skills for games and sport. Developing trends and the attention of the mainstream media has resulted in an overemphasis on reserchers measuring PA levels during lessons in a bid to curb the obesity epidemic (Kirk,2006). Gray et al, (2017) recently reiterated that the focus of learning in PE is traditionally teacher intensive and educationally narrow with a strong emphasis on the physical domain. Placing an emphasis only on the physical domain during PE lessons means that learners who have low perceived competence “see little relevance in participating in lessons” (Gray et al., 2017). Recently, the drive towards a more holistic approach in PE has emphasised that PE should have two main goals: (1) To prepare for a lifetime of PA and (2) to engage pupils in moderate to vigorous PA levels (Kohl and Cook, 2013, pp 197-201).

6.3.1 Rationale for PA research in adolescents

The health benefits of PA are strongly supported and well documented (Cooper and Hancock, 2011). Accordingly, a growing body of quantitative evidence advocates increased

PA levels in adults, adolescents and children (NICE, 2007). Consistent with many countries, UK guidelines for PA recommend that children and young people accumulate at least 60 minutes per day of moderate to vigorous intensity PA (Department of Health, 2011). Nevertheless, longitudinal studies have demonstrated a steep age-related decline, ranging from 26-37%, in total PA levels during adolescence (Belanger et al., 2011; Telama et al., 2000; Aaron et al., 2002).

Despite the acknowledged importance of regular PA, there is a paucity of evidence investigating why people do and do not participate in PA; the relationships between varying levels of participation at different stages of life and the primary reasons underpinning the post 16 decline in PA (NICE, 2007; Coleman et al., 2008).

6.4 Evidence on the barriers and facilitators of participation in PA, sport and exercise

The evidence surrounding adolescent participation levels in PEPAS and exercise, and the barriers and facilitators dictating participation levels, is currently dominated by quantitative research (Allender et al., 2006; Martins et al., 2015). The methods employed often rely on cross-sectional questionnaires in a survey format, and accordingly tend to focus on quantifying participants' beliefs, attitudes and knowledge surrounding PEPAS and exercise. Furthermore, other quantitative studies are retrospective in their data collection, relying on epidemiological evidence using a longitudinal approach (Martins et al., 2015). In summary, data collected by existing quantitative studies may show associations, but do not enable

researchers to make conclusions of causality. Qualitative research, in contrast, may offer a different set of insights as to why adolescents do or do not participate in PA, sport and exercise (Allender et al., 2006; Martins et al., 2015).

The National Institute for Health and Clinical Excellence (NICE), published a series of reports summarising the evidence base surrounding the promotion of PA for children and adolescents (NICE, 2007). In an attempt to increase the validity of the evidence base, the third report took the form of a qualitative ‘review of reviews’ documenting the evidence. This report identified only five systematic reviews relating to correlates of PA in children and adolescents (NICE, 2007).

6.4.1 Qualitative evidence on adolescent participation in PEPAS

Whilst reviews such as the quantitative edition of the NICE collaboration and studies such as ‘Health Survey England’ assess trends and provide statistical evidence, this evidence does not provide insight into participants reasoning for making these choices. Despite the numerous publications employing quantitative research methods, it has been acknowledged that qualitative methods offer in-depth insights into individual’s experiences and perceptions of the motives and barriers to participation in sport and PA (Allender et al., 2006). Accordingly, the rich detailed data arising from qualitative research may be useful in providing an answer as to why individuals do or do not participate in PEPAS and exercise.

Whilst the qualitative evidence relating to the barriers and facilitators of activities are limited, several key reviews have addressed this area and indicated that significant changes in life course have important implications for participation in PA. This may be particularly evident at the ages of 15 and 16 as many adolescents leave compulsory education during this timeframe. Elsewhere, however, it is suggested that this decline in PA relates to the onset of puberty (Niven et al., 2009; NICE, 2007; Martins et al., 2015). For this reason, the current review aims to qualitatively determine the barriers and facilitators of PEPAS and exercise in adolescents with an emphasis on two areas:

- i. Research study 3 looks at the compulsory phase of education, focussing on 12-15-year olds.
- ii. Research study 4 investigates those who are 16-18 years old, who would be labelled as being part of the senior phase of CfE education, currently in non-compulsory education.

6.5 Methodology

The electronic databases: Medline, Embase, Cochrane reviews, Omnifile, ABI inform and Google scholar, were searched for UK and worldwide academic literature published between 1985 and 2016, using the key search terms: Physical activity; sport: physical education; exercise; barriers; facilitators; adolescent; post 16 gap; decline; qualitative study.

Additional resources were sought through associated public health journals, and from grey literature such as Government reviews, in tandem with cross referencing from the NICE qualitative review. Although the search strategy employed a systematic approach, the breadth of this literature entailed that a full systematic review, as outlined by the Cochrane Collaboration, was deemed both imprecise and excessively cumbersome. The inclusion criteria, accordingly, covered literature that used qualitative methodologies to ascertain or describe the opinions, feelings and perceptions of UK adolescents aged 12-18 towards participation in PEPAS and exercise.

6.6 Barriers and facilitators to PEPAS

6.6.1 Perceived Image as a barrier in PEPAS and exercise

The literature, over the past 10 years, has been dominated by the role of image in determining attitudes to PE, PA and exercise. This theme is particularly pronounced in females, for example see Mitchell et al., (2015). Concerns about body shape and weight management, along with the need to conform to popular ideals of beauty, are cited as important factors in facilitating PA participation (MacIsaac et al., 2018; Mitchell et al., 2015; Allender et al., 2006; NICE, 2007; Coleman et al., 2008). The competitive nature of sport based PE, the presence of males in the classroom and the fear of being perceived as not feminine, have all been cited as barriers to participation in females (Coleman et al., 2008). Subsequently, whilst many teenage girls may be willing to participate in PA, they must do so in a non-competitive environment within which they feel comfortable (Mitchell et al., 2015). The feeling of being 'inadequate' when executing skills in PE classes, and

being unable to demonstrate skills competently, also feature prominently as perceived barriers amongst adolescents,(Allender et al., 2006; Coleman et al., 2008;MacIsaac et al.,2018; Whitehead and Biddle, 2008). Nevertheless, several reviews show that between gender, there are no differences when comparing effects of self-efficacy and task mastery in adolescents (Allender et al., 2008; Allender et al., 2006).

6.6.2 Image, identity and peer influence

As already mentioned, one dominant barrier to participation relates to perceived image and social pressure to conform to perceived standards of peer-group ‘normality’. The influence of perceived image and the role that teenage magazines play in determining adolescents’ attitude towards PA were explored using focus groups, by Mitchell (1997). Participants were recruited from groups of females aged between 14-15 years old. This formed part of a larger quantitative survey. A large percentage of participants reported that they did not participate in organised sport, whilst participation in other types of PA was ‘occasional’. The influence of friends, ‘hanging around’ shopping malls and spending time watching television were cited as more popular than participating in sport or PA. The key barriers to participation were cited as ‘lack of motivation’ and a conflict of interests where the activities would be seen to affect their social lives and how they would be perceived by peers (Mitchell, 1997).

The need to fit in with peer-group perceptions of desirable behaviour was highlighted as an important aspect in determining uptake of PA. Being self-conscious of body shape, hairstyle and make-up has been reported as a prohibitive factor, particularly in females.

Simultaneously females frequently feel uncomfortable exercising in front of boys (Niven et al., 2009; Knowles et al., 2011) or other adolescents whom they do not know or with whom they feel insecure (Coleman et al., 2008; Whitehead and Biddle, 2008; Martins et al., 2015). Additionally, weight management and body image aspects associated with PA participation dominate the benefits of PE and exercise more than the other health benefits associated with participation (Orme, 1991). Peer group normality also features prominently in the literature. For example, recently, MacIsaac et al (2018) highlighted the importance that young people place on social media interaction and the high social status that they gain by portraying a ‘celebrity like’ image. Additionally, they emphasised that such image based social environments mean that PE classes could present a space where others are open to judgement by their peers. The subject of peer influence may also be an issue at the age when females form their first adolescent relationships. For example, in earlier research by Coakley and White (1992) females reported that their boyfriends actively discouraged them from participating in sport and activities. In contrast, it was reported that few girls would discourage their boyfriends from participating in sport and activities (Coakley and White, 1992). However, recent research by Keresztes et al., (2008) has highlighted that females may be more likely to be active, if their boyfriend or partner is also active. Furthermore, the encouragement to participate in activities by parents, siblings and peers was one of the main factors in ensuring sustainability in determining continued participation (Martins et al., 2015; Mason 1995; NICE, 2007).

6.6.3 School PE, physical activity, sport and exercise

The extant literature investigating childrens' PA levels tends to focus directly on the school environment, in subjects aged 5 to 16 years old. Several authors note that PA studies involving adolescents lack rigorous evaluation, and that there is a distinct lack of research outside the area of school based PE (Brunton et al., 2005; Rees et al., 2006).

Additionally, it has been argued that much of the literature in the PE domain, tends to focus on what Kirk (2006) refers to as the "here and now", as characterised by a focus on capturing current PA levels during PE lessons. This approach typically fails to acknowledge the need to educate with the intention of promoting long-term sustainability of PA. As aforementioned, the accountability of school PE in defeating the childhood obesity crisis is a major factor driving this focus on prioritising the measurement of PA levels in PE based research (Kirk, 2006). Given the role of the school in promoting activity and the ability to recruit participants and collect large amounts of data, the use of the school environment is understandable. However, few studies qualitatively evaluating PA and exercise participation attempt to recruit participants outside of the school setting.

In the US, Morgan and Hanson (2008) previously classified barriers to participation as institutional or teacher related. Whilst one qualitative study conducted in Canada identified PE as having a low priority in their schools, leading to poor infrastructure and the lack of performance measures (Dwyer et al., 2003). In establishing important barriers, concerns have been raised regarding environmental and logistical barriers. For example, a discouraging school environment, the rules relating to the use of showers and changing arrangements, PE kit/uniform and lack of availability of mirrors are all perceived as

negative influences on participation (Mitchell et al., 2015; Orme, 1991). Inadequate facilities, and the lack of outdoor facilities during winter have also been noted as environmental barriers. Specifically in relation to female participants, the influence of changing facilities, inadequate shower arrangements and consequences of bad weather, also feature within the literature (Orme, 1991; Mason 1995; Brooks and Magnusson, 2006). However, the work of the Fit for Girls intervention (Mitchell et al., 2015) has highlighted the need to create a more positive environment with better PE uniforms, hair straighteners and cleaner, private shower facilities, all introduced into schools and seen as a positive initiative capable of bringing about sustainable change (Mitchell et al., 2015; Sportcotland, 2016). Indeed, the majority of studies focus strongly on female participation, whilst the data involving male subjects is limited. One international study, however, carried out in a school setting, highlighted that a decline in participation in activities was prevalent in both boys and girls as they approach adulthood, this was attributed to a change in priorities as their social lives increase, together with an increase in school work and part time jobs (Belanger et al., 2009).

6.6.3.1 Negative PE experience for adolescents Under 16

Task mastery, perception of competence and self-efficacy featured highly in preventing participation across genders, with those perceiving themselves to be “less skilled” avoiding participation (Coakley and White, 1992; Inchley et al., 2008). Participation in children’s activities were more likely to continue when sessions were perceived as fun, and when there was less emphasis on competitive sports (Macphail et al., 2003). Previously, positive teaching methods have been recommended as key motivators for PE participation,

especially amongst females (NICE, 2007; Mitchell et al., 2015; Knowles et al., 2011; Martins et al., 2015; Whitehead and Biddle, 2008; Macphail et al., 2003). Conversely, poor teaching methods, lessons of questionable quality, a lack of communication and a bias towards a games-based curriculum, in tandem with complicated rules, have been cited as perceived barriers to PE in under 15's (Mason 1995; Morgan & Hansen, 2008; NICE, 2007).

Importantly, individuals from a higher socioeconomic status perceived that PE teachers were good role models and helped to facilitate PA participation (Martins et al., 2015). The comprehensive review of qualitative studies conducted for the NICE (2007) examined determinants of PA in young children and adolescents. The ability to demonstrate sporting skills to a competent level were cited as facilitators to PA in adolescent females, whilst a perceived lack of ability had an inverse effect. However, the reward of attempting to achieve a socially desirable body type, through activity, was also seen as a major facilitator.

6.6.3.2 Activity choice

Whilst several studies highlight that respondents are reluctant to take part in certain activities, Brooks and Magnusson (2007) emphasised that previous studies focused heavily on competitive sports and school based PE. Brooks and Magnusson (2007) recruited two cohorts, consisting of a total of 42 participants (13-16-year olds), 31 of which were recruited through schools, with the remainder recruited through a postal invitation in partnership with GP surgeries. Associated findings reflected those of previous studies, in that participants felt that traditional school games and sports did not present ideal,

comfortable opportunities for PA. Instead, their leisure choices were dominated by activities that they felt challenged them without being competitive. Some chose to participate in exercise classes, however, others preferred solo recreational activities and perceived activities in areas such as gyms or exercise classes as intimidating (Brooks and Magnusson, 2007). Indeed, the limited qualitative literature available has highlighted that those who dislike the traditional competitive sport environment of PE can have positive PEPAS experiences when non-competitive activity options exist, therefore this choice results in greater pupil autonomy (Macphail et al., 2003).

Very few studies emphasise the failings of teaching methods or lesson organisation as influences on non-engagement but instead highlight the reluctance of many to take part in traditional sports and competitive games. Several reviews have recommended the involvement of young people in determining their choice of activities, which should encompass free diverse activities provided by after schools' clubs and include activities such as cycling, fitness classes and individual based activities. Furthermore, females in particular identified barriers to PA associated with team games (Rees et al., 2006; Brunton et al., 2005; Flintoff and Scraton, 2001; Brooks and Magnusson, 2006). This may be of importance given that longitudinal studies have shown that sustainability of activities in adolescence is greater for those classified as individual activities.

The need for pupil choice and autonomy in PE lessons has been cited as a precursor to building intrinsic motivation in those resistant to participation (Forsyth, 2014; Mitchell et al., 2015; Brooks and Magnusson, 2007). In Scotland, the implementation of the Fit for

Girls program highlighted the positive aspects of autonomy and pupil choice as part of a nationwide initiative. This initiative also involved a longitudinal study conducted on S2-S4 females, with a small sample case study approach carried out in the East of Scotland. Perceptions of competence, an unsupportive, overly competitive PE environment and negative social influences from both teachers and others in their year group featured highly as existing barriers to engagement in PE. After establishing the main barriers, the participants took part in an intervention aimed at increasing PA by engaging in a range of PE based activities chosen by the pupils. This involved fitness based activities, use of gym equipment and indoor games such as softball and dodgeball. The freedom of choice regarding the type of activities, the environment and the individuals who the pupils worked with during activities, resulted in an increase in participation and a more positive perception of the subject. The authors concluded that increased engagement in PE arose consequent to an improvement in pupils' intrinsic motivation due to increased levels of autonomy and the positively supportive environment.

6.6.3.3 The cons of excessive pupil choice in PE

Previous research has highlighted that pupil choice is often used as a method of attempting to enhance enjoyment for older pupils and counter disengagement, in the hope that the pupils enjoy PE and therefore promoting sustainable PA (Horrell et al., 2012). However, others have warned that this may devalue the educational aspect of PE and may be more akin to 'managed recreation'. Accordingly prioritising the 'here and now' of increased PA levels, over the educational aspects of PE which could be more impactfully focussed on sustainable learning promoting lifelong activity, health and wellbeing (Horrell et al., 2012).

6.6.4 Studies conducted in a community setting

Whilst pupil choice of PE topic, autonomy and student-centred teaching methods are cited as potentially enhancing uptake in pupils taking part in PE, the failure to address these at the senior phase of CfE (at the ages between 16-18 years old.) exists. One study employed a series of twenty-one qualitative interviews, on a group of 15-year-old females recruited as part of a larger study within a North-Eastern English city. This was one of the first qualitative studies highlighting a positive attitude towards PA participation both in school based PE and PA that was not part of the school timetable. Though this study focused solely on females, it highlighted that young females perceive health and fitness to be an important part of their lives, with many commenting that exercise helped to increase their self-esteem and energy levels. Those that identified barriers cited mixed PE classes, inappropriate clothing and the failure of teachers to teach them new skills. Interestingly, most respondents were involved in PA outside of school hours, but did not participate in sport based activities (Flintoff and Scraton, 2001).

6.6.5 Influence of negative PE experiences for those Post 16

Whilst the work of Flintoff and Scraton (2001) targeted females aged 15 years and investigated PA outside the school environment, some studies have included adolescents over the age of 15. One study, conducted by Coakley and White (1992), endeavoured to understand why young people participate in sport. Within this study they highlighted that the transition from childhood to adulthood was a key risk time for dropping out of activities. They conducted a series of in-depth semi-structured interviews on 34 males and

26 females aged 13-23 years, with three participants over the age of 18. All the participants were recruited from working class families in the South-East of London. Fifty percent of the participants were recruited from a group of active individuals involved in a sport development scheme. The remainder were purposively sampled by teachers and programme organisers after they were identified as non-participants in previous activity programmes that the teachers had facilitated.

Most respondents stated they were reluctant to participate in activities that they felt were “childish”. Some female respondents stated they felt that adult women should not participate in sport and were discouraged from participating due to this belief. Many expressed concerns preferring activities which were individual rather than team-based, highlighting that they were more likely to participate in activities that they thought prepared them for adulthood.

Young females were more likely to perceive sport participation as irrelevant and of low priority in preparing them for the transitional phase from adolescence to adulthood.

Females who did participate reported that there were often conditional restraints affecting their levels of participation, particularly from friends of the opposite sex. Similarly, a large majority of male respondents responded that sports participation “made them (girls) look butch”. Task mastery, perception of competence and self-efficacy featured highly in preventing participation across the genders, with those that perceived themselves to be ‘less skilled’ avoiding participation (Coakley and White, 1992) .

Coleman and co-workers (2008) elaborated on their previously conducted research for Sport England, in 2006, by eliciting a series of in depth interviews on 75 young females aged 15-19 from two distinct geographical locations. The study emphasised that intrinsic factors such as self-perception, perceived competence of ability and being self-conscious were the most important factors in hindering or facilitating exercise. Whilst those more likely to regularly participate held a more positive approach to sport and PA than those who never or rarely participated. Personal choice and seeing PEPAS as compulsory was also an important factor in determining participation. Respondents in this study commented that many did not take part upon reaching the age when PE stopped being compulsory. Additionally, they noted the detrimental impact of life transition phases particularly when leaving compulsory education and /or transitioning to the workplace. In such cases coursework at college, lack of energy and previous experience of PE were all seen as barriers to present participation (Coleman et al., 2008).

Finch and White (1998) recruited 58 participants from a series of doorstep and shopping centre based interviews. The study aimed to explore beliefs, perceptions and barriers to PA amongst young females. Individual interviews were also conducted on young single mothers. Many participants described themselves as inactive. Those who described themselves as active reported that they were motivated to exercise when the exercise was enjoyable, made them feel good and by the understanding that it helped to control their weight. Those who did not participate in exercise or regular PA felt that they did not have enough time to exercise, and that the access to facilities and the cost of activities was too expensive. Furthermore, the lack of skill in performing activities, combined with a lack of

self-confidence, was cited as a barrier to exercise and PA. However, there was a distinct misunderstanding among participants as to what constitutes exercise and PA, with most participants perceiving that sport and team activities formed the main basis of activities (Finch and White, 1998).

6.7 Transition phase 'Post 16 decline'

Recent review by Martins et al., (2015) highlighted that upheaval and uncertainty surrounding life transition periods were a barrier to adolescent PA participation. Most of the studies in their review focussed solely on females, concentrating on the transition from primary to secondary school. One reviewed study, conducted by Cox and colleagues, in 2006, highlighted the importance of transitions and acknowledged the impact of transitioning from school to work or college/University as a barrier to sport. Transition from primary school to secondary school was also seen as a major barrier to sustaining activity, particularly sporting based activities as sport was perceived as becoming more competitive, and less fun.

Furthermore, socialising with peers who did not participate was likely to affect sustainable PA and sports participation among females (Martins et al., 2015). Participants perceived that beginners' classes and an emphasis on fun and socialising would cause them to feel less self-conscious than at school PE lessons. Similarly, inadequate community facilities for exercise and sporting opportunities, and associated access problems and financial costs, were also seen as barriers to PA (Cox et al., 2006; NICE, 2007).

6.7.1 *The role of physical educators*

As previously noted, one study by Coleman (2008), focussing on the Post 16 transition to the labour market, highlighted that perceived image, perception of own ability and an element of choice were necessary to sustain PA. Of further interest, recent quantitative work, conducted in the USA, highlighted that negative PE experiences had an effect on PA levels for undergraduate females, but not males (Kimball et al., 2009).

Several initiatives have been suggested as promoting lifelong PA. Some of which suggest the need for curriculum change to promote PA sustainability. For example, Fairclough and colleagues (2002) highlighted that team games dominated PE, and reiterated the need for the curriculum to positively impact PA participation in adult life (Fairclough et al., 2002). Similarly, a recent meta-analysis of global sports and activities which concluded that:

team sports, lifelong activities, gymnastics, fundamental movement skills, need to be taught to prepare individuals for a lifetime of activity. In many countries around the globe, however, much of the curriculum focuses on developing skills in team sports rather than those needed for individual/small group activities, such as running, swimming, or cycling (Hulteen et al., 2017,p22).

The recent work by Hills (2015) reported physical educators must be the key drivers to initiating lifelong activity and that an emphasis on health related PE, may help positive PE outcomes across domains, and should (Hills et al., 2015). An overemphasis on team sports may cause unintended consequences for individuals, including potentially discouragement and disengagement for the least skilled individuals. However, the argument could also be made that does not depend on curriculum content change, but rather a change in the method of delivery. Since the inception of this thesis there has been some, albeit limited attention

warning against the consistent focus on PE as a tool to increase short term, to the detriment of the promotion long-term, PA. Hobbs and colleagues (2017), for example, warn that PE is seen as a “‘silver bullet’ for resolving the inactivity crisis”, whereas a more appropriate focus of PE is to “encourage lifelong participation in PA and the long-term health of children” (Hobbs et al., 2017).

In Scotland, there is a paucity of evidence in 16-18 year old PEPAS participation levels, illuminating this topic which has previously been largely ignored. This may be due to the priority of certification during this phase and the nature of hierarchial structures. (Forsyth, 2014; Boyd, 2008). However, one recent conference proceedings, by a leading Scottish educator, emphasised that PE staff need to listen to pupil voice and advocated the need for alternative PA provision for pupils who do not enjoy games (Forsyth, 2014). Furthermore, others have proposed replacing traditional PE teaching methods, seen so often in our schools, with a more student-centred individualised MBP approach (Casey and Goodyear, 2015).

6.7.2 Activity decline during the 16 to 18-year-old life transition phase

To date, the research examining the detrimental effects of life transitions on PA, particularly focussing on transition from school to college/full time employment have been extremely rare, with few qualitative published UK studies (Coleman et al., 2008). One study focussed on the transition stage for young athletes from school to University (MacNamara and Collins, 2010). Similarly, another social media based, unpublished survey addressed the influence of school PE on PA participation as an adult (Goodyear,

2016). Recently, a quantitative study conducted by Gibson and colleagues, (2016) examined the health behaviours and PA levels during the transition from high school to first year university, and between the first two semesters. Within this study a significant increase in waist (1.2 cm) and hip circumference (2.0 cm), $p < 0.05$, was observed, across semesters, as PA levels diminished. Interestingly, there was simultaneously an increase in anxiety levels (but not depression), as PA levels declined (Gibson et al., 2016). Subsequently suggesting an inverse relationship between increasing anxiety and decreasing PA levels.

One recent review conducted by Martins and colleagues (2015), suggested it would be beneficial to qualitatively understand why PA levels change during the transition stage of leaving compulsory education. This review highlighted that there was a paucity of evidence facilitating a better understanding of the 'post 16 gap' phenomenon (Martins 2015).

6.8 Conclusion: Summary of reviewed literature

Qualitative evidence has reiterated the findings of quantitative studies in relation to determining traditional barriers and facilitators to participation in PEPAS. However, conducting qualitative studies enhances clarity and suggests that non-participation is not simply a result of poor PE kit, dirty changing rooms and poor availability of facilities. At the heart of this issue lie perceived competence and how young people feel they are viewed by their peers. Additionally, teaching methods and curriculum content play a major role in determining future participation by providing early positive PE experiences. Key barriers highlighted in this chapter include:

- School environment, PE uniforms kit and changing rooms
- Poor facilities
- Gender stereotypes and mixed gender classes
- Negative experience of facilities
- Weather and outdoor environment
- Peer conformity
- Image and how young people are perceived and judged on image
- Overly competitive classes, games and complicated rules.

In contrast, identified facilitators included:

- Positive teachers acting as role models in PE
- Positive teaching methods
- Peer conformity
- Activities perceived as fun and enjoyable
- Extrinsically motivated image barriers such as weight loss, body shape and weight management.

Positive reinforcement from PE teachers, along with the choice to participate in solo activities, are also perceived as positive steps in encouraging PA participation. Both within, and outside of school contexts positive social and family influences. Similarly, the ability to conform to a socially acceptable body image, was identified as a key facilitator of activity participation.

Much of the qualitative evidence lacks a detailed methodology and fails to adequately analyse the core reasons for non-participation. Additionally, a majority of the existing research uses samples drawn from a school based environment, with an emphasis on PA accumulation rather than focusing on learning in PE. From this perspective, the current body of evidence may be considered weak. To enable researchers and policymakers to better understand the drivers of non-participation, amongst adolescents transitioning from childhood to adulthood within and out with a school environment, more information is needed. Additional insight, in this regard, could facilitate the evolution of enhanced pedagogical strategies targeted at reducing the drop-off in PA during this life transition.

The next two chapters in this thesis hope to expand on this area, by qualitatively analysing the underlying reasons are for non-participation. Chapter 7 focuses on analysing the broad general education phase, whilst chapter 8 focuses on the post 16 senior phase of the curriculum.

CHAPTER 7 - RESEARCH STUDY 3: WHAT MAKES YOUNG PEOPLE TICK? A QUALITATIVE ANALYSIS OF THE BELIEFS AND PERCEPTIONS OF SCHOOL AGED CHILDREN TOWARDS PE AND HEALTHY LIVING IN “THE SICKEST AREA OF EUROPE”

Prologue

Previous studies identified several key barriers to PA (NICE,2007) In the previous chapter, I addressed the barriers to PEPAS in adolescents. The literature reviewed highlighted that the interest and enjoyment of traditional PE activities is already declining at the S4 stage (Gray et al., 2008). The following study investigates adolescents’ perceptions and attitudes to PEPAS, and their understanding of health and wellbeing. This involves pupil voice using focus groups in S1-S2, many of whom have just transitioned from primary education.

Relevance to my professional domain.

The studies contained in Chapter 7 and 8 aim to inform the professional practice of PE teachers by highlighting the necessity of effective curriculum design, and informing the creation of stimulating, inclusive, learning environments.

Chapter 7 specifically focuses on young peoples’ perceptions and attitudes to PEPAS at school, and their understanding of PA in their daily lives.

7.1 Abstract

Scottish children are reported to be among the least active in the world. Furthermore, Scotland has previously been labelled ‘the sick man of Europe’ due to its poor health record. In response, the Scottish Government has implemented a range of policies with a strong focus on increasing PA, PE and integrating health and wellbeing initiatives designed to promote and sustain PA throughout life. To date, however, only a limited qualitative research base exploring pupil perspective of PE lessons, and health and wellbeing, exists.

Within this study, focus groups were conducted with 39 secondary school pupils (S1-S2). Subsequent findings indicated that delivery of traditional PE lessons, prioritizing sporting ability, act as a participation barrier to pupils who consider themselves ‘non-sporty’. Accordingly, a shift towards more pedagogical-oriented models such as co-operative learning, rather than simply blocks of sports-related activities, is suggested as a priority for physical educators.

Key words: *Adolescents, Physical Education, Activity, Health and Wellbeing*

7.2 Introduction: The current situation

Scottish children are reported to be among the least active in the world. An analysis of 38 nations ranked Scotland as joint last for PA and excess screen time activity (Reilly et al., 2016). Furthermore, amongst 11-15 year olds, only 21% of boys and 15% of girls in Scotland met the Scottish, UK, and international standard recommendation of at least 60 minutes of PA of at least moderate intensity per day (Reilly et al., 2016). Scotland has

previously labelled ‘the sick man of Europe’ on account of its poor health record, lifestyle factors and higher mortality rates when compared with other European countries (Bromley and Shelton, 2010). Yet, paradoxically, the recent ‘Active Healthy Kids Report’ card showed Scotland has one of the best environments and infrastructure for outdoor play in comparison to other nations (Reilly et al., 2016).

Consequently, in the drive to improve the health of the nation, the Scottish National Party (SNP) led Government has implemented a range of policies with a strong focus on increasing PA, PE and integration of health and wellbeing in schools, with a focus on promoting activity during the first decades of life with the aim of sustaining PA throughout the lifespan. Scottish education, and more specifically PE, have been the source of great change in the past decade (Thorburn and Horrell, 2011). The implementation of CfE in the education system, coupled with the implementation of new national qualifications together with integration of PE into the new health and wellbeing framework are examples of this change. The integration of PE into the health and wellbeing framework, and indeed the new interdisciplinary status of health and wellbeing in the Scottish curriculum, are undoubtedly policy driven reactions to the state of Scottish health and the recommendations emerging from the Scottish physical education review group (Horrell et al., 2012; The Scottish Executive, 2004).

Adolescence is a critical time for forging PA habits and promoting lifelong PA participation. The link between school PE and adult health has been well established in the literature (Fairclough et al., 2002; Shephard and Trudeau, 2000; Bélanger et al., 2015;

MacNamara et al., 2015). Additionally, the early years of schooling exert a significant influence on PA patterns, particularly during the early phase of primary school when essential movement skills are installed (Giblin et al., 2014a; Jess and Collins, 2003). Yet as children leave school there is typically a very high drop-out from physical activities and sport, suggesting that current PE teaching methods are not adequately lending themselves to sustainable activities (Capel, 2013; Jess and Collins, 2003).

Accordingly, the school years appear fundamental to adequately instilling the behaviours and habits crucial to creating healthy lifestyles (Kirk, 2005; Cale and Harris, 2005; Giblin et al., 2014b; Kirk, 2013b; Jess and Collins, 2003; Cale and Harris, 2009). Additionally, Cale and Harris (2009) have cautioned that for PE to act as a vehicle for lifelong activity, “the content and delivery of the curriculum is critical, and it is important that young people are provided with the knowledge, understanding and skills required for lifelong participation in PA and with positive, meaningful and relevant PA experiences that will foster positive attitudes and confidence”. Furthermore, the work of Kirk (2013b) highlights the need for PE to take on a more engaging, pedagogical approach in order to survive.

7.3 Relationship between health behaviours and PA

Engagement in PA, sport and exercise exerts a positive remediating effect on the negative consequences of accumulating life stress. Previously, we postulated that one of the potential underlying causes of the Scottish (and associated Glasgow) effects, was the additive combination of lifestyle, cultural and environmental stressors to which many Scots are exposed (Cowley et al., 2016).

The World Health Organization (WHO) highlighted the importance of organized school PA and sport. For example, higher level sports participation has been shown to be associated with other behaviours such as less antisocial behaviour, alcohol consumption, use of illicit drugs, and engagement in violent activities (Jones-Palm and Palm, 2004). Whilst importantly, those who are not engaged in competitive sports should be encouraged to be physically active ‘outside of the rubric of competitive sports’ (Brooks and Magnusson, 2006). The most accessible method of targeting younger people to uptake sport and PA is through the school PE program. Undoubtedly, physical educators play a role in not only teaching PE in the curriculum but in promoting health messages so crucial to establishing and sustaining healthy behaviours throughout life. Despite the curriculum change and an implementation of policies with a strong PA message, and the subsequent increase in school PE, there is little evidence that this has had an impact on young people’s PA levels, or their understanding of health and wellbeing and health behaviours. It has been suggested that the recent findings of low PA can be attributed to Scotland having a culture of low PA. Additionally, barriers such as parents being over-protective, means that children lack the freedom to play in order to build confidence, autonomy and resilience has also been cited as a contributing factor (Reilly et al., 2016).

7.4 Young people’s understanding of PA/ PE and healthy living

It has been suggested young people have an insufficient, inadequate understanding of healthy behaviours such as PA, PE and other health and wellbeing factors (Harris et al., 2016). By way of example, Keating et al., (2009) reported a lack of health-related fitness

(HRF) knowledge amongst American College students (Keating et al., 2009). Similarly, Powell and Fitzpatrick (2015) highlighted that when New Zealand primary school children conceptualized their perspectives on fitness and health topics, that the predominant definition of fitness was the avoidance of ‘being fat’ (Powell and Fitzpatrick, 2015) and, in the UK, Roth and Stamatakis (2010) reported most young people have a poor familiarity with PA guidelines (Roth and Stamatakis, 2010). For females, knowing the guidelines was associated with meeting them, but the relationship between knowledge and application was weak amongst boys (Roberts and Marvin, 2011). More specifically in relation to school PE, previous work suggests that young people are more likely to continue PE participation if they have a teacher that they like, whom they perceive as professional and who offers them a variety of activity choices (Sandford et al., 2012; Rikard and Banville, 2006).

Whilst confusion may arise as to what constitutes effective PEPAS and exercise, evidence demonstrates that, in the domain of healthy eating and diet, that most young people are adequately knowledgeable yet lack the necessary skills to implement healthy living strategies within daily life (Roberts and Marvin, 2011).

An accurate understanding of attitudes and beliefs is essential in planning effectively targeted remedial strategies. Nevertheless, there is a paucity of qualitative evidence investigating young people’s beliefs and perceptions relating to healthy living.

Furthermore, the research base pertinent to young people’s knowledge and understanding of health and wellbeing, fitness and PE and PA is limited, and especially in relation to the Scottish population (Forsyth, 2014). Greater insight, within these realms, may greatly

assist those tasked with developing pedagogical strategies targeting the development of healthy, active lifestyles.

7.5 Aims of the study

The previous chapter investigated the literature surrounding barriers to PEPAS in adolescents. Bearing in mind the stress-inducing cultural aspects of Scottish life discussed in Chapter 4 and 5, and the convergence of multiple, stress-promoting phenomena in Scotland, this paper seeks to qualitatively assess the opinion of 11-13-year olds in the West of Scotland, to better understand these young people's perception of the term healthy living. Accordingly, the aims of this study are:

- To investigate young peoples' perceptions and attitudes to PE at school, and their understanding of PA in their daily lives.
- To explore young peoples' perceptions and attitudes to healthy living, and to inform the design of novel teaching methods that professionals could use to communicate health and wellbeing messages to adolescents to improve their health behaviours.

7.6 Methods

7.6.1 Approach

In order to address the posed research questions, an inductive thematic analysis, using a bottom up approach, was selected (Braun and Clarke, 2006). A thematic framework was

applied to all the data. Inductive thematic analysis does not rely on existing, pre-determined, theoretical perspectives, but instead relies on the data itself: thereby providing dimensions of theoretical flexibility (Braun & Clark, 2006). Accordingly, the coding and theme development were directed by the content of the data. This approach is recognised as particularly useful when little is known about the topic under consideration (Braun and Clarke, 2006; Clarke and Braun, 2017). Thematic analysis was first recognised as a qualitative method in the 1970's, and there are several methods of application. The protocols of this study follow those outlined by Braun & Clark, (2006). The analysis procedures are discussed in more detail in the appendix 3.

A topic guide was devised based on an initial literature review (see appendix 3). This review examined adolescent's attitudes to health and determines what aspects of healthy living are important to them. The guide consisted of nine open ended questions focusing on the overarching question: **What do young people understand by the term 'healthy living?'**

Focus groups should contain 3-4 major questions to allow for the facilitator to fully explore each issue in suffice detail to provide a rich data set (Kitzinger, 1995) The use of group discussions may generate comments that are more critical than those generated in one-to-one interviews (Thomas et al., 2015). The development of focus group questions can be categorised in one of three ways:

1. Highly structured-These do not allow for a great deal of flexibility within the focus group session but are useful in gaining specific data and may be useful in keeping the focus group on topic.
2. Moderately structured-These allow for flexibility where the session builds around a core set of questions.
3. Minimally structured-These are useful in early stage research but require a great deal of facilitator experience due to their reliance on one or two pre-determined questions (Huston and Hobson, 2008; Thomas et al., 2015).

To allow flexibility but keep a structured flow to the focus group session this study took a ‘moderately structured’ approach. This would allow the facilitator to encourage each participant for a response and allow discussion of these responses, therefore allowing adequate data capture, whilst keeping a structure to the session. The interview guide also included a series of prompting statements pertaining to the research questions and relevant prompting examples. The order of the questions was also considered by the researcher to allow the session to flow naturally and therefore stimulate maximum discussion.

7.6.2 Ethical Approval and Participant Recruitment

I, as the facilitator of this study, sought advice regarding the ethical requirements for this research. Ethical approval was granted to administer and carry out the project. Ethics adhered to the following conditions:

- Participation will be voluntary, children and parents will be provided with information sheets and asked to sign consent forms.
- The transcripts from face-to-face interviews and focus groups will be irreversibly anonymised so that the participant's identity is fully protected.
- It is not possible to identify the individual from any direct quotation used in the reporting of the project.
- Roman Catholic schools participating requested that questions pertaining directly to sexual activity, sexual health or contraception should not be asked under the guidelines of the Scottish Catholic Education Service, which ‘sets national policy on all educational matters on behalf of the Bishops of Scotland. Although, these subjects were not directly referred to in non-denominational schools.

7.6.3 Sampling Strategy

A purposive sampling strategy was employed in this study. Schools were purposively sampled based on socioeconomic factors and characteristics of the school to provide a diverse sample of participants’. JC contacted secondary schools within the West of Scotland category area with the hope of recruiting suitable participants. Further ‘lead’ assistance was provided by individuals from the PE school liaison coordinators. Researchers visited the schools and gave a presentation entitled “Improving health in young people”. This presentation discussed healthy living issues and ask the audience to think about young people’s health – what are the challenges and how do we improve things? Following on from this, school children were asked to sign up for focus groups to talk about healthy living and their thoughts about ways to improve health in people like themselves in more detail. In total, three different schools were visited,

with a total of ten focus groups being conducted. A description of the sample is contained in appendix 5.

7.6.4 Procedures

The focus groups were held in convenient locations for participants. Each group was facilitated by the author (JC), each focus group was 55 minutes in duration. The facilities were visited by the research team one week prior to hosting each focus group to allow familiarisation with the layout and check the venue suitability. On arrival at the venue each participant was welcomed and offered refreshments. Informal conversation during this period helped to act as an ice breaker, to create an atmosphere of trust. When all participants were assembled, each participant was given a written consent form along with an oral explanation of the nature of the study. The ethical considerations, option to opt out, confidentiality implications and focus group rules were explained to the participants. All participants received a full explanation of the study and assurances about confidentiality and anonymity.

Each session was digitally recorded using two Olympus voice recorder WS 311M, Olympus imaging corp. Tokyo Japan. The discussion was based around the topic guide devised after the extensive literature review as detailed above. Although the session followed a moderately structured questioning process, the facilitator intervened to explore and clarify comments made by participants within the group as they arose.

7.6.5 Analysis

The data from the voice recorders was transcribed verbatim by independent transcribers. Express dictate digital software v5.16, Colorado, USA, was used to listen and re-listen to the anonymous data and compare this to the original transcript to allow a data cleaning process, minimise transcription error and capture any data from participants making comments in the background or by talking over other individuals. Amendments to the transcripts were then verified by a third person independent of the research. Each transcript was analysed independently by the author using thematic analysis following a six step process and following guidelines as described elsewhere (Braun and Clarke, 2006; Mays and Pope, 1995) (See appendix 3). Thematic analysis was chosen using a bottom up, inductive approach due to its ability to produce a ‘thick description’ of the data set, whilst being easy and quick to apply to a large data set (Golafshani, 2003; Braun and Clarke, 2006). Emerging themes were identified, these themes were read and re-read until a general consensus was reached. Particular attention was devoted to obviating the risk of quotes being taken out of context or becoming distorted (Mays and Pope, 1995). This process was conducted in order to ensure robust descriptive validity (Golafshani, 2003).

7.7 Results

7.7.1 Demographics and summary of themes

The present study's sample consisted of thirty-nine participants, composed of twenty-two females and seventeen males. The mean age of the participants was 12.56 (\pm 0.56) years old. It was the intention of the author to recruit 11-13-year olds, but most participants were aged 12 years. Participants were recruited from three schools in Scotland.

School 1: A faith school was positioned fourth in the regional school league tables for 2009-2010. Twelve percent of the school's pupils are eligible for free school meals. In 2009-2010, 15 % of S5/S6 pupils achieved five or more Highers at A-C grade, a figure 4 % above the regional average.

School 2: Eighteen percent of the school's pupils are eligible for free school meals, a figure 3% higher than the regional average. In 2009-2010, 13% of S5/S6 pupils achieved five or more Highers at A-C grade, a figure 7% below the regional average.

School 3: This school was positioned twelfth in the regional school tables. Eighteen percent of the school's pupils are eligible for free school meals, a figure 3% higher than the regional average. In 2009-2010, 8% of S5/S6 pupils achieved five or more Highers at A-C grade, a figure that matched the regional average.

Analysis of the focus groups conducted revealed four main themes:

1. Awareness of current health messages.
2. The role of PE and PA in their lives and existing barriers and facilitators to this.
3. The role of image and social acceptance.
4. Social influence on health-related behaviour and health advice.

7.7.2 Awareness of current health messages

Participants from all schools were highly aware of current initiatives and health messages from the Department of Health and Scottish Government campaigns. Health education messages appear to be getting through to this group to a certain extent. Participants were aware of the constituents of a healthy balanced diet, the importance of PA in maintaining a healthy lifestyle and the causes of diseases such as cancer and heart disease. Furthermore, participants showed awareness of recent campaigns such as those promoting PA, as well as those highlighting the negative effects of smoking and excessive alcohol consumption.

“You could walk places instead of taking the car.” R5

[Smoking and Drinking] “They lead to heart problems when you are older.” R21

The Government campaign for people to eat five portions of fruit and vegetables a day appears to be a health message that the majority of participants are familiar with:

“Maybe eat loads of fruit ... not loads of fruit, just eat your five a day and maybe that just the odd time have chocolate or something.” R32

“Keeping clean and healthy so when you are older you can get like a good job and education [and eating] your five a day.” R24

When asked, what healthy living meant to them and why it was important, most of the participants' comments were related to illnesses that could occur as a result of an unhealthy lifestyle. By far the most mentioned diseases were cancer and heart disease. Some participants raised the issue of longevity.

“Maybe later in life so you get more out of your life instead of like having a heart attack younger.” R7

“In later life it could leave you susceptible to more diseases and things like that and cancer and things.....Heart attacks.” R10

Weight gain, obesity and body image appeared to be important to many of the participants. Some participants were aware of weight management issues and had basic knowledge of how people may become overweight.

“It all mounts up. Like if you eat a chocolate bar each day then you maybe don’t notice it, but like later on you can maybe notice how much weight you’ve put on from doing it.” R8

“Just because you don’t want people making fun of you that kind of stuff. If you were a bit bigger so you’re always try and keep slimmer, but some people can take that to the limits as well, which isn’t great which makes them unhealthier than they may already be”. R30

7.7.3 The role of PE and PA in their lives and existing barriers and facilitators to this.

Most importantly, some participants see PE as a vehicle that can help improve quality of life when they are older and help prevent the disease.

“PE and taking part in sports clubs is important as it could help prevent stuff like cancer and heart disease when you get old”. R34

“Stay fit, stay fit for your life, keep on eating healthy and all that... Like if you’re not healthy and fit and you’re older then you end up with all those problems with you, if you’re fit you’ve got a better immune system to fight it... [you can do this by] Being out more, doing PE, exercising and like getting into clubs”. R20

However, the conversation below highlights the importance of image and provided the first clues as to why being socially accepted and conforming to a certain image may act as a barrier (or facilitator) to PE participation.

“...tell me more about why you think that’s important, what about taking part in PE for example?” Fac

“Just people, at this age people take a lot of pride in their image usually. Because they go like, at PE and stuff, when it’s like free sometimes, the guys like when the girls are in, (they) do like sit ups and press ups and all that. To show off to the girls”. R12

Certain aspects of the taught curriculum then further highlight the importance of conformity to a specific image. Similarly, the need for appearing cool was perceived as important in PE classes amongst male member of all the focus groups:

“Like people want to be thought as of, kind of [pause] in like the cool group or something like that. Such as fitness test and PE people want to do better to impress... to impress friends”. R9

*“People get made fun of, like if you get a low score (in fitness testing)”. R8
“... all that people get made fun of, like if you get a low...A low score. Then (you get) bullied people are really, really fighting to be the best”. R10*

One of the strongest subthemes to emerge was the emphasis on competitive sport and sport based drills. This was commented on across gender. Curriculum content was perceived by several people to favour those good at sport or of a competitive nature, as highlighted previously, many participants commented on fitness testing and perceived it to be a negative element of PE.

“I don’t like the beep test or having to do press-ups in a minute it’s pointless R36”.

“Every year it’s the same thing when we come back after the summer holidays all line up in the big hall and do the bleep test, then circuits, should be doing fun games like dodgeball n stuff like that. Cos everyone wants to join in then R39”.

7.7.4 The role of image and social acceptance

The image dominant theme and its relationship to social acceptance from peers was not only confined to PE participation but was dominant throughout this study. Most female participants reported that the pop star Cheryl Cole was their ideal role model. Most females reported that body image and “being skinny” was important. Although most males did not name specific role models, they did idealise a bulky, muscular physique.

“I think the girl one would be Cheryl Cole. Like I think its most really just [girls] trying to stay skinny, just to be cool and stuff.... [I] think it’s more skinny for girls, but it’s like bulky [for boys] ... [boys want] more muscle.” R11

One word which featured a lot throughout each discussion was “cool”. This word has connotations of being trendy and being desired. Participants reported that it is crucial for them to be the same as their peers and their main desire appeared to be to ‘just fit in’. Popularity is often regarded as the ultimate goal in adolescents’ lives and they reported looking up to popular pupils as role models. Some participants reported that younger individuals within the school sometimes take part in unhealthy activities in the hope of being perceived as cool and of being socially accepted. One participant highlighted that peer pressure might influence pupils' decisions to take up smoking, particularly if there is the fear of name calling. This was highlighted in the following conversation:

“I think it depends what the people like. If I saw someone smoking, I don’t think they look cool, but other people might...”

... it used to be like people who didn’t smoke were the kind of outcasts... the different people, but well now it’s kind of if you don’t smoke it’s kind of different”.
R10

“What do you mean by that”? Fac.

“Like a lot of people smoke. So, it’s like peer pressure and everything. So, if you don’t want to do it, then you could still do it because of the peer pressure”. R11

“Yes, because you can be forced into it, that’s what. [Usually what the initial stages of it are] ... simple one saying you’re like a chicken if you don’t”. R10

Another participant reported that pupils' fear that they will become victims of bullying and physical violence if they do not take part in smoking and drinking sessions:

[If you didn’t take part in smoking and drinking] “Some people would batter you... it happens.” R23

7.7.5 Social influence on health-related behaviour and health advice

Some participants reported that parental influence was important when it came to making lifestyle decisions, such as whether to choose healthy food or not. It was also discussed that an adolescent would be more likely to smoke or drink alcohol if their parents were smokers or drinkers.

[On seeking health advice and health information] “Hmm, I would probably say my mum [?] because erm she buys like the sweets and she buys the food... [I would say I] want to be a wee bit healthier and she would maybe say yeah instead of going to the chippy or Chinese maybe give you a homemade meal.” R7

“Could be because all their family smoke or something so they think that’s okay”. R19

When asked whom, they would be most likely to go to if they wanted health advice, most participants responded that they would confide in a parent, who would then probably consult their family's General Practitioner. It appears to some extent that gender plays a role in which parent they would turn to for advice.

“It depends what one [parent]. I mean, for you [pointing to a female member of the focus group] ... and she’d probably go with her mother and I’d probably go with my dad”. R15

Some participants perceived that some were more capable than others of giving health advice. One participant commented that he would accept advice from his father because he was a biology lecturer. He then suggested that if his father did not have a university education, he would be more reluctant to seek advice from him. Surprisingly, many participants did not feel that they would want to share confidential information with their teachers. Participants said they would be more inclined to seek advice from a school teacher whom they felt knew more about the body. PE teachers featured highly on the list of teachers from whom participants would seek advice.

“If your dad was a doctor, maybe you’d [listen to them] ...because my friend’s mum and dad are both doctors, so you’d probably listen to them.... if your dad was a dry-cleaner [you wouldn’t listen to him] You don’t need to go to college to be a dry-cleaner. Lawyers need to go to university”. R15

“[I am] probably more inclined to listen to a PE teacher than a French teacher”. R14

There were conflicting comments from participants regarding health advice from peers. Some participants commented that they would turn to a friend for advice.

“You’d go to your friend after because friends aren’t always going to know everything, but if you wanted you could ask them what they think you should do like.” R16

However, some participants expressed concern that friends might mock them if they confided in them. One participant also commented that the person they sought advice from depended on the nature and confidentiality of advice that he required.

“If it’s personal and your family knows about it, like a health issue, then you’d talk to your family and maybe not your friends because your friends might mock you. And you might go to your teachers with a health issue maybe, but I wouldn’t go with something personal.” R15

7.8 Discussion

The use of focus groups allowed a detailed insight into young people’s attitudes towards PEPAS and health and wellbeing. It was notable that most themes provided a consensus across all the focus groups conducted, though differences in opinions and perceptions will be described when appropriate.

Prior to conducting the research it was expected that socio-economic factors would be influential in shaping understanding and perception of healthy living (Rashotte, 2007). This expectation was borne out, as it emerged that pupils from schools in more affluent areas reported less exposure to alcohol, drugs and tobacco. However, awareness of current health campaigns and healthy living issues was consistent across all focus groups.

7.8.1 Image, Social Acceptance and Social influence

The importance of social influence was persistent throughout this study. Similar to previous findings, social influence appeared to influence the thoughts, feelings and behaviour of adolescents as they attempted to conform with their peers, (Rashotte, 2007). The desire to “fit in” and the need to maintain an image of “being cool” was influential in determining attitudes and beliefs relevant to participants’ perception of PE participation and pertaining to unhealthy activities such as smoking, drug consumption and drinking.

7.8.2 PE barriers to participation

Clearly participation in PE classes, especially when class content was interpreted as competitive was perceived as the domain of the cool sporty group. The use of fitness testing and overly competitive based lessons already favour those who excel at sport, rather than promoting PA and education to the diverse spectrum of pupils (Grenier and Yeaton, 2012; Cale and Harris, 2009).

7.8.2.1 Fitness testing and competitive activities

Traditional PE curriculum in the UK usually follows a set structure, beginning with a block of fitness testing and subsequently leading to fitness development lessons, followed by a block of games and aesthetic activities with an emphasis on teacher-directed activities. A similar format follows in a lesson based context where traditionally games lessons are composed of a warm up, skills based drills followed by a competitive game (Casey and Goodyear, 2015).

The data presented within this study highlights that many participants feel that fitness testing and overly competitive lessons presents a barrier to their participation or enjoyment and, potentially, exposes them to an increased risk of bullying. The use of fitness testing in modern PE has previously been severely questioned with doubts raised over the reliability, validity and educational purpose of this (usually compulsory) topic (Cale and Harris, 2009). Furthermore, Cale and Harris (2009), highlighted that the overuse of fitness testing in PE may not only fail to promote healthy lifestyles and PA but could deter young people from participation (Cale and Harris, 2009).

The potential for overly competitive games to act as a barrier to participation was particularly evident in games such as football (soccer), where some reported that if they made a mistake during a game then they were “slagged and bullied” in the changing rooms. Green (2004) argues that there needs to be a move away from competitive, performance oriented sport towards “*the inclusion of more recreational sporting activities*”, with a more tailored degree of personal choice permitted (Green, 2004). However, it could be argued that using a pedagogical model approach, focussing on tactical problems would promote inclusion by allowing the pupils a greater understanding of the game (Gray et al., 2017), therefore building competence and allowing more autonomy (Sproule et al., 2011). Additionally, it is apparent that some respondents are aware of weaknesses in the PE curriculum and are aware of some teachers ‘churning’ out the same thing year after year. This is particularly important when considering that the repetitive aspects of short blocks of activity does little to foster motivation and confidence to promote involvement and lifelong activity (Kirk, 2013b; Murdoch and Whitehead, 2012). It has been highlighted that the creation of a more inclusive, trusting and safe learning environment, using an approach involving pedagogical models, lends itself to greater intrinsic motivation by successfully establishing the basic needs of self determination theory, namely: competence, autonomy and relatedness (Deci and Ryan, 1985; 2002; Gray et al., 2018).

7.8.2.2 Technology and co-operative learning

The use of technology and groupwork as mentioned by the respondents in school 3 appears to demonstrate a model based approach to PE teaching namely co-operative

learning (Casey and Goodyear, 2015). Co-operative learning involves students being empowered by learning from each other with the teacher acting as a facilitator. This use of a models based approach involves an alternative method of teaching PE and has had success in helping disengaged pupils overcome barriers to participation. The idea that pupils are aware of the repetitive nature of traditional lessons further highlights the point that teacher centred lessons do not lend themselves to an inclusive environment whilst fostering intrinsic motivation. However, model based practice such as co-operative learning may offer a means of overcoming the limitations of the traditional approach (Kirk, 2013a; Casey and Goodyear, 2015; Kirk, 2013b).

7.8.3 Health behaviour choices

Whilst this study does not directly evaluate the reasons why adolescents make certain choices relating to their health and wellbeing, it is clear that pressure to conform to peer-group norms greatly influences adolescent behaviour. When it comes to choices about smoking, previous work by Michell and Amos (1997) identified that peer influence, and the need to appear cool, is more important to females than to males (Michell and Amos, 1997). This was partly attributed to boys having other interests, such as sport and computers. However, the findings presented here suggest that the factors influencing decisions on whether to partake in smoking, drinking and recreational drugs are not as gender specific. Boys were as likely as girls to be susceptible to peer influence.

The findings do however reiterate the powerful influence male aspirations to conform to ideals of the 'muscular, macho' image of maleness. Females, on the other hand, identified

their ideal role model as Cheryl Cole. The desire to imitate and emulate celebrities seems of the utmost importance to many young females and is suggested, by both Fraser and Browne (2002) and MacIsaac et al (2018), to reflect a deep-seated need to enhance their self-esteem (Fraser and Brown, 2002; MacIsaac et al., 2018) as accordingly, it has previously been suggested that celebrities may be more influential role models to adolescents than their immediate peers.

Given that adolescence is recognized as a time when healthy and unhealthy lifestyles are forged, it is important that health and wellbeing messages are appealing to adolescents: hence entailing that health messages should be communicated via a medium relevant to adolescents, and in a language, that appeals to them. Accordingly, the use of peer education from positive role models is one such area that could be developed further, while celebrity endorsements may also be influential in communicating positive health and wellbeing messages to adolescents: thereby harnessing adolescents' attempts to identify with their favourite celebrities. One such initiative, currently running in Scottish schools, is known as 'Champions in Scotland', which aims to encourage a "nation of young people to do their best in life". (Championsinscotland.com, 2018). Similarly, the use of respected pupils within schools, or the use of young medical students closer to school children's own ages, as demonstrated in previous pilot studies, may prove effective in communicating health messages (Jobanputra et al., 1999).

7.8.4 Peer conformity and bullying

Paradoxically whilst the ‘sporty’ avoid being slagged and bullied, as they appear cool, those who partake in unhealthy behaviours such as smoking, and drinking were seen as being ‘tough’ However, for others the fear of being singled out, ‘slagged’ and bullied was a concern. These participants believed that many younger adolescents succumb to unhealthy activities for fear of being viewed as different, whilst some spoke about the threat of verbal abuse and physical violence. The fear of bullying and reports of isolated incidents involving severe peer pressure and bullying corroborates previous research conducted by Michell and Amos (1997), who documented incidences of bullying that could be more appropriately described as physical assault (Michell and Amos, 1997).

7.8.5 Methodological limitations and strengths

There are several limitations but also strengths to this study. Firstly, generalizability from focus groups may be limited. Accordingly, the findings of this study may not necessarily extrapolate to the whole Scottish population. Nevertheless, although generalization in focus groups should be treated with caution, tentative inferences may be appropriate where participants share commonalities to comparison populations, such as those from similar backgrounds and socio-economic strata (Vicsek, 2010). Consequently, suggesting that these study findings are likely to be broadly generalisable across similar adolescent populations within Scotland.

Additionally, focus groups and the nature of group interactions may compel participants to concur with opinions they do not necessarily hold. Furthermore, bias due to the presence of

socially dominant participants, or an overly dominant moderator, may also compromise validity.

Lastly, the sampling strategies employed in the present study may be vulnerable to bias. Indeed, since the participants were all volunteers, there may be an inherent self-selection bias, whilst the nature of a focus group design involves a relatively small number of participants.

Despite these limitations this study had several strengths. The use of focus groups enables the capture of richly detailed data, while allowing adolescents to articulate their beliefs, concerns and aspirations on health issues (Braun and Clarke, 2006). The use of a core set of questions within a moderately structured focus group helps eliminate moderator bias, and minimised monopolisation of the discussion' by individual participants (Braun and Clarke, 2006).

Additionally, the use of a purposive sampling methodology ensured the sample was representative of the requirements of the study: thereby permitting comparisons between opinions of various schools and surrounding areas.

Finally, responses from the initial questions derived from the topic guide suggested that whilst most of the participants were fully aware of health issues and campaigns, a variety of opinions and misconception arose around structured exercise and PA guidelines and practice

This suggest that most participants did not have substantial background knowledge of the topics under discussion.

7.9 Conclusion

The results of this study suggest that traditional PE lessons which prioritise a high sporting competence, act as a barrier to those who perceive themselves to be ‘non-sporty’. The findings presented here clearly illustrate that young people are aware of the current health messages being delivered both at a national and at a school level. Accordingly, getting adolescents to understand important health issues does not appear to be the problem. Instead, getting adolescents to practice a positive healthy lifestyle presents a greater challenge. Whilst there is a requirement for a change in the way PE is delivered, the responsibility of health and wellbeing is the remit of all Scottish teachers. However, this too may require alternative approaches. The use of older peer groups and peer coaching in communicating health and wellbeing messages may be one possibility. The present study illustrates the need for a greater understanding of the barriers preventing awareness, from becoming action. What has become apparent is that how adolescents’ perceptions of how they ‘fit in’ with peer groups, and their interpretation of how they are perceived by others plays a crucial role in driving their health choices. Clearly self-identity, social influence and the need to be socially accepted all play important roles in establishing healthy lifestyles in adolescents.

Many of the barriers normally associated with participating in PE can only be overcome if pupils feel comfortable and supported. Crucially the role of image and social acceptance

present key barriers to adolescent PEPAS participation, and adherence. Diminished participation in adolescence, in turn, influences future PA in later life, thereby impacting long term health. Further research is required in this field, especially to investigate dropout rates in PE classes during the transition phase from compulsory PE. Any new initiatives must aim to be socially acceptable to adolescents at school leaving age. These findings may also be useful in advising stakeholders involved in developing effective interventions designed to overcome adherence barriers. Similarly, these findings suggest the curriculum is not adequately tailored to the needs of individual pupils, and consequently may not create the best environment to promote sustainability. Additionally, the use of a ‘models based practice’ approach, embracing modern technology could potentially be positively incorporated into PE classes. Such innovation may, in turn, limit non participation (Goodyear, 2016). The use of technology with the integration of pedagogical models such as cooperative learning should be considered as an exciting, ‘novel’ way for teaching staff to improve the health attitudes and lifestyles of young people by promoting PE for all and increasing awareness of the perils of unhealthy diets and smoking.

Future research should direct school leavers towards physical activities that individuals can sustain throughout the life span. Whilst the current emphasis within PE focusses on activity during the lesson, a fuller, and potentially more beneficial, role for PE lies in establishing lifelong PA habits, and in engraining the fundamental knowledge and skills necessary to participate in future PA challenges.

What this study adds

- *This study adds additional literature relating to the role of self-image, perceived competence and social influence of PEPAS participation.*
- *Respondents perceived that aspects of PE were outdated and felt they prioritised sports performance capacities.*
- *A shift in the methods of teaching PE curriculum would be welcomed by participants.*
- *Lessons should be based around pedagogical models promoting self-efficacy and intrinsic motivation. Examples of co-operative learning embracing new technology were provided.*

What is the novel element of this study?

This study embraces the call for pupil voice and qualitatively investigates the barriers and facilitators of PEPAS and exercise in the BGE phase of CfE in Scotland.

Figure 4 Summary of Research Study 3

CHAPTER 8 - RESEARCH STUDY 4: A QUALITATIVE ANALYSIS INTO THE POST 16 GAP OF PA- HOW CAN LIFELONG HABITS SUCH AS PA BE FORGED MORE EFFECTIVELY?

Prologue

In chapter 8, I address the paucity of Scottish-specific evidence relating to 16-18 years olds. A life stage categorised as the senior phase of CfE. Previous studies have tended to focus around compulsory school ages of 5-16years old. As identified in Chapter 6, there is currently no official recording of PE participation by the Scottish Government and Education Scotland for those still at school during the Senior, non-compulsory phase of education. Additionally, this study investigates the barriers and facilitators to PA in this older category, focussing on those who have already transitioned from compulsory schooling.

8.1 Abstract

Adolescence is a critical time for establishing life-long health habits, such as PA (Pearson, 2009). Several reviews have illustrated a shift in life course, particularly between ages 15-16, which has implications for PA participation during later life (Niven et al., 2009).

In the UK, an estimated 60% of young people do not participate in structured activities post compulsory education: a phenomenon labelled the post 16 gap (Honeybourne et al., 2004). According to data extracted from the Scottish Health Survey, only 39% of adults

(45% of men; 33% of women) achieve the PA guidelines of 30 minutes of moderate activity on five or more days per week (The Scottish Government, 2012). Furthermore, amongst 11-15 year olds, only 21% of boys and 15% of girls in Scotland met the Scottish, UK, and international recommendation of at least 60 minutes of moderate intensity daily PA (Reilly et al., 2016). Despite these figures, there is a marked lack of research on declining activity levels in 16-18-year olds. Similarly, there is also a paucity of qualitative evidence investigating why people participate, or fail to participate, in PA, and how life stage impacts PA levels. Several studies have identified key barriers to PE and PA. Such barriers include: a lack of resources; the influence of peers and the opposite sex and time invested in socialising with friends (National Institute for Health and Clinical Excellence 2007).

Purpose: This study investigates why young people discontinue participation in exercise, sport and PA, whilst analysing reasons for this post compulsory education decline.

Methods: Twenty-four respondents were divided into five focus groups. Requirements were that individuals had left secondary education and/or were in the Post 16 phase of compulsory education.

A semi-structured topic guide was developed to establish perceptions of PA and experiences of PE and PA within formal education. Each focus group was digitally recorded with the key themes highlighted using NVivo using thematic analysis. A semi-structured topic guide was developed to establish adolescent's perceptions of PA and

experiences of PE and PA within formal education. Each focus group was digitally recorded with the key themes highlighted using NVivo thematic analysis.

Results: Several key barriers and facilitators of participation in PA were identified. The barriers and facilitators cited by respondents are similar to those described by those who previously expressed a dislike for participating in core PE (Allender et al., 2006). Previous negative experiences within PE contexts were perceived as a major barrier to continued PA. Respondents perceived that PE Teachers focused primarily on physically capable students, leading to feelings of incompetence in others. This perceived incompetence exerted a major effect on future participation in PA.

Most respondents equated PA with team sports. Respondents commented that low access to contemporary fitness activities, such as Zumba and Metafit, were barriers to participation.

Conclusions and recommendations: The implementation of core PE for all pupils above S4 should be prioritized. Additionally, a two-pronged approach should be taken: providing more choice during school PE with greater diversity of activities and the implementation of model based approach to PE teaching across all phases of CfE. Physical Educators should emphasise sustainable, personalized PA with less focus on the competitive aspects of games, providing adequate choices for pupils. The educational component of PE can be enhanced by adopting a pupil centred ‘model based’ approach, particularly when teaching activities such as games, this may help to develop movement competence. Furthermore, the enactment of modern activities, following current trends of the fitness industry, may

enhance PA promotion in post 16 adolescents, whilst increasing participation in those currently at school.

8.2 Introduction

Adolescence is a critical time for establishing life-long health habits, such as PA (Pearson, 2009). This transition period is characterised by sharp declines in PA, and by changes in the types of activities that adolescents participate in (Belanger et al., 2009; Telama and Yang, 2000; Bélanger et al., 2015). This decline is particularly prominent between ages 15-16, and has implications for participation in PA in later life (Niven et al., 2009; Bélanger et al., 2015).

In the UK an estimated 60% of young people do not participate in structured physical activities post compulsory education: a phenomenon labelled the post 16 gap (Honeybourne et al., 2004). According to data extracted from the Scottish Health Survey, 39% of adults (45% of men; 33% of women) achieve the PA guidelines of 30 minutes of moderate activity on five or more days per week (The Scottish Government, 2012). Furthermore, amongst 11-15 year olds, only 21% of boys and 15% of girls in Scotland met the Scottish, UK, and international recommendation of at least 60 minutes of daily PA of at least moderate intensity (Reilly et al., 2016). Despite these figures, research on 16-18-year olds and the reasons underpinning the decline of activity is lacking. Most studies investigating this area, tend to focus on quantitative aspects of this decline, with few qualitative studies conducted.

8.3 Barriers and facilitators

Previous school based studies have cited infrastructure, PE uniforms, changing facilities and mixed gender classes as barriers to school PE participation in those under 16 years of age (Mitchell et al., 2015; Orme, 1991; Coakley and White, 1992; Martins et al., 2015; NICE, 2007). Lack of facilities, poor body image and perception of competence have all featured as perceived barriers to continuing activity participation in both younger and older adolescents (Martins et al., 2015; Brooks and Magnusson, 2007; Gray et al., 2008; MacNamara et al., 2015). In contrast, the influence of PE teachers, socialising, friends and family have all been cited as important in the promotion of PA sustainability (Allender et al., 2006; Allender et al., 2008; NICE, 2007).

8.4 Types of activity that influence sustainability

Recent literature has identified which types of PEPAS are more likely to promote activity sustainability into adulthood (Bélanger et al., 2015). Previously, several studies recommended the involvement of young people in determining their choice of activities. Encompassing, for example, a range of fitness based activities such as cycling, fitness classes and dance classes. Females, in particular, identified team sports as a barriers to PA (Rees et al., 2006; Brunton et al., 2005; Flintoff and Scraton, 2001; Brooks and Magnusson, 2006). Some qualitative studies previously identified that team games dominate PE, with several studies proposing a need for the curriculum to contain more activities having a greater carry over value into adult life (Fairclough et al., 2002). Conversely, one recent longitudinal study conducted on 12-13 year olds, over a 13 year period, concluded that

adult PA levels may be predicted by participation in activities such as running, walking and sports (Bélanger et al., 2015). However, activities such as fitness classes and dance based activities were not related to higher PA levels in adulthood. The authors attributed this lack of sustainability to the belief that participation in fitness and dance activities were driven by body image and weight loss /muscle tone goals. Thereby suggesting that participants were extrinsically motivated. In contrast, a Canadian based qualitative study focussing on a sample of 15-16-year olds, reported that immediate health benefits and an impact on body image was important as an activity facilitator. Additionally, access to facilities were seen as a barrier to continued participation (Bélanger et al., 2011).

8.5 The adolescent dip in activity levels

Recently emerging literature highlights that the adolescent dip in activity levels is governed by early participation in specific types of activities, which increase the likelihood of participation in the same activity into adulthood (Bélanger et al., 2015). For example, participation from an early age in martial arts, endurance sports such as running and horseriding are positively associated with higher adult PA levels (Telama and Yang, 2000; Tammelin et al., 2003; Trudeau et al., 2004). Additionally, adolescents who participated in ball games, jogging, aerobics and bodybuilding at age 15 were more likely to participate in these activities 8 years later (Kjønniksen et al., 2008). Despite this, evidence from longitudinal studies highlights that participation at age 15, either in school or in the community, does not protect against the decline during late adolescence. (Bélanger et al., 2009). Whilst others report that adherence to higher PA levels is reliant on an early,

positive PE experience at the primary stage (Shephard and Trudeau, 2000; Trudeau et al., 2004).

Previous transition based studies in late adolescence have focused primarily on individuals attending university, with very few studies investigating the reason for the decline from the participants perspective. Gibson and colleagues (2016) suggested an inverse relationship between increasing anxiety and decreasing PA levels in students during the early phase of their degree (Gibson et al., 2016). Similarly, international studies focusing on transition tend to focus on university students/ college freshmen and report an increase in BMI and changes in habits potentially harmful to health (Bray and Born, 2004; Crombie et al., 2009; Koehn et al., 2016). As previously mentioned, few of these studies determine the reasoning behind these changes in behaviour from the adolescents perception. Furthermore there is a paucity of evidence relating to those who do not attend university (Koehn et al., 2016; Nelson et al., 2008; Nelson et al., 2006).

8.6 The role of PE

The school environment is highly influential in determining physical identity and future participation of PA (Coleman et al., 2008). Additionally, previous research identified that negative PE and PA experience at school may act as a barrier to future participation (Allender et al., 2006).

Primary age PE is considered a necessity in enabling development of physical literacy, commonly considered necessary to build the skills required for a physically active life (Giblin et al., 2014b). Therefore it is suggested that PE, particularly for younger children, should focus on improving physical competence rather than focusing on their short-term fitness (Giblin et al., 2014a; Giblin et al., 2014b; MacNamara et al., 2015).

The aforementioned decline in post-16 PA and lack of sustainability, highlights that traditional PE programmes in schools are making little progress in building a foundation for lifelong PA (Jess and Collins, 2003). Whilst curriculum content has been the focus of much of the research, others have proposed replacing traditional PE teaching methods, seen so often in our schools, with a student centred curriculum models based approach, taking an individual approach focussing on every learner (Casey and Goodyear, 2015).

Recent literature has proposed a shift in how PE is delivered to optimise sustainability of PA (Bailey et al., 2009b; Kirk, 2005; Kirk, 2013a). Recently, one proponent of model based PE, conducted a survey on an adult population to quantitatively investigate the effects of previous school experience of PE on current PA levels. Their findings reported that 37% of women and 26% of men rarely enjoyed PE, while 47% reported that PE had not helped them to be more physically active as adults (Goodyear, 2016). Despite this, the research investigating the perception of PE based on past school experience is limited, but important, due to the influence this may have on PA participation levels in adulthood (Goodyear, 2016).

Although the present study focuses on individuals, 16-18 years, who are no longer within the age of compulsory education, a positive PE experience in a school environment is one of the most influential factors in determining the sustainability of activities. Whilst short termism for health benefits may be important, a positive PE experience can help build on the autonomy, relatedness and to enable PE to achieve its *raison d'être* of lifelong PA. For this reason, it is viewed important to seek out the views of those who are in the 16-18 years age group to identify barriers and facilitators at the transition stage. To understand adolescent motivation the effect of previous PE experiences need to be understood, particularly from a qualitative perspective to inform future interventions and curriculum design.

8.7 Rationale and research questions

There is a paucity of qualitative evidence investigating why young people participate, or fail to participate, in PA, and the relationships between levels of participation and various stages of life. Most of the studies are carried out 'on' children/adolescents, instead of 'with' them- involving the power of pupil/student voice. Consequently, exploring qualitatively how they would improve PEPAS opportunities. By listening to the voice of young people an insight may be provided to enable the practitioner to inform best practice and to help design future interventions.

Therefore, this study aims to explore:

1. What are older adolescents' perceptions of PEPAS and health?
2. What are the barriers and facilitators to post 16 PA?
3. What effect does school based PE have on us as we leave or prepare to leave school?

The final question being pertinent to sustaining PA as we transition from childhood to adulthood.

8.8 Methods

8.8.1 Study design

A cross sectional, qualitative approach was used to explore previous experience of PE and to investigate young people's perception of PE, PA Sport and health. Focus groups were chosen as the method of data collection and are reported to provide the richest data in relation to public views of priorities in health research (Kitzinger, 1995). Accordingly the use of focus group based discussions may generate comments that are more critical than those observed in individual one-to-one interviews (Thomas et al., 2015).

8.8.2 Participants

Twenty-four participants aged 16-18 years (mean age 17.36 ± 0.23) were recruited from five community and education settings across urban and rural areas in and around the West of Scotland. The recruitment was facilitated via snowball sampling using the author's

contacts through tertiary education institutes, apprenticeship training companies and networking through work based contacts, these were not incentivised. Inclusion criteria deemed that respondents had to have left the compulsory phase of education in Scotland and lived in the West of Scotland area. Groups ranged in sizes from 5 to 7 participants. All participants were of white British ethnicity, 60% were female.

8.8.3 Focus group topic guide

A semi-structured topic guide was developed to establish and identify barriers and facilitators to PEPAS, this topic guide was informed by questions arising from the conducted literature review. The focus group topic guide was piloted on three 16-year-old senior school pupils, not involved in the study, and some minor amendments were made to the order of the questions. Similar research was conducted in the PA for adolescents in Scotland Survey, however this did not qualitatively determine barriers and facilitators for those in the transition phase between leaving school and attending further education institutes and or apprenticeships.

8.6.3.1 Procedure

The study was approved by the University of Central Lancashire (UCLan) Ethics Committee according to the Declaration of Helsinki. Each participant gave written informed consent after procedures were fully explained. Focus groups were conducted in a tertiary education centre; light refreshments were provided. Each participant was free to withdraw from the study at any time. Each focus group was digitally recorded and transcribed verbatim. The

data collection took place during the month of June with the average recording lasting 48 minutes.

8.8.4 Data analysis

In order to address the posed research questions, an inductive thematic analysis, using a bottom up approach, was selected (Braun and Clarke, 2006). A thematic framework was applied to all the data. Inductive, thematic analysis does not rely on existing, pre-determined, theoretical perspectives, but instead relies on the data itself: thereby providing dimensions of theoretical flexibility. Thematic analysis was first recognised as a qualitative method in the 1970's, and there are several methods of application (Clarke and Braun, 2017). The protocols of this study follow those outlined by Braun & Clark, (2006).

Transcripts were read and reread for data familiarisation and to derive raw data themes data was organised and imported into NVivo. The data was subsequently read and reread by a second individual who was independent of the study, to ensure that any alternative interpretations were considered before the final themes were ascertained. The analysis procedures are discussed in more detail in section 2.5. All participants were anonymised, and pseudonyms are used in the presentation of the data.

8.9 Results

Analysis of the focus groups conducted revealed three main themes:

1. Previous negative experience of PE at school was seen a barrier to future participation. Sub-themes included: a) The role of PE teachers and how they engage and deliver lessons, b) The content of the curriculum and pupil choice of activities.
2. The role of image and its importance as a barrier and/or facilitator in exercise, PE and PA.
3. Social circumstances and their effect on participation together with suggestions to improve participation in PA.

8.9.1 Previous negative experiences of PE

Most members of the focus groups had a clear understanding of the definition of PA and its comparison with exercise, despite this, during each of the focus groups there was a tendency for most participants to associate PA with competitive sports. Additionally, although many were aware of the benefits and public health message encouraging PA, confusion existed as to what constituted PA and the difference between this and PE. Some members of each focus group did not understand the difference as clearly as others.

Barriers and facilitators cited by respondents were similar to those described in previous studies involving school children participating in formal PE. Additionally, previous negative experiences of PE were perceived as major barriers to PA participation.

Furthermore, the idea that previous educational experience may contribute to the post 16 gap is somewhat novel. Many respondents cited this as one of the main reasons as to why they dislike the idea of exercise participation even after leaving school. Within the data, there was support for the previous findings related to single sex PE classes and the role of

gender. This is one aspect which is dominant in the existing literature (Mitchell et al., 2015; Coleman et al., 2008; NICE, 2007). By way of example respondents expressed concern relating to their teachers' gender:

*It should be a wummin teacher for the lassies and a man teacher for the guys. It's sometimes a bit creepy if they (PE teacher) are old men.
(Female, Janey, aged 17)*

Some respondents felt that the teachers did not set a good example and that their teaching methods were poor:

*Some of the PE teachers were too old and had fat bellies. Some of them just stand about and do nothing, but just expected you to do it. They didn't really expect you to do it at your own ability, just to do what they had asked.
(Male, Simon, aged 18)*

This was echoed by another participant from a different focus group:

*It was as if they (the teachers) cannae dae it themselves and show you it (poorly) once and expect you to dae it...you get asked to dae sumfin and other people start laughing 'cos you are asked to demonstrate and cannae dae it.
(Female, Mandy, aged 18).*

Perceived competence was highlighted as a major driver of future PA participation.

Respondents perceived that PE teachers focused primarily on physically capable students.

Several participants felt that the teachers bullied them and made them self-conscious,

leading to a negative perception of themselves and ultimately demotivating them:

*Sometimes the teachers push you too hard and shout at ye in front of everyone and you get embarrassed that makes you not want to take part. Then you get made fun of if ye are not good at games like football.
(Male, Simon, aged 18).*

Others felt that they had experienced bullying from their PE teacher and that this had put them off exercise:

They dinny realise they are bullying you, they just think they are pushing you but it's their teaching methods, they think they are motivating you, but they aren't. it just puts me off exercise now. (Female, Lauren, aged 16)

Some participants expressed concern over favouritism, regardless of gender; this seemed to be an issue. Highlighting that these teachers only seemed to spend time teaching those who excelled at games based PE. Some participants saw this as a form of sexism:

Teachers favoured me cos I was good at sport 'cos a done that fitness cos ae their body shape a mean that does still happen. Teachers still do that. (Female, Angela, aged 19)

I didn't like the teacher. She didn't like the girls She didn't do anything and favouritised the boys. (Female, Beth, aged 17)

One o' the male teachers were very sexist oh you can't do it cos boys are better. (Female, Angela, aged 19).

Curriculum content was also seen as a major barrier to participation, both for PE participation at school, and in future life stages. Many participants felt that their previous PE experiences left them with an attitude that reveals that exercise and PA are negative experiences. The following statement highlights the lack of pupil choice and prescriptive aspects of the curriculum:

We didn'y get choices they telt ye what you were doing (Male, Andy, aged 18).

Aye we were the same we had to do table tennis cos all the boys wanted it. A mean our teacher taught dance but couldn't do it (Female, Andrea, aged 17).

One respondent highlighted the difference in curriculum content when comparing what they had received during PE lessons to what their friends had experienced in another school from a more affluent social category. Whilst other respondents saw the content of the curriculum as narrow in choice and availability of activities.

*Good choices in PE are needed... getting good demonstration would made it better, stuff like Dancefest and more choices. Glen Academy has a different type of PE from (what we had) it's the better school in a better area.
(Female, Megan, aged 18)*

*Choices were limited. It went by the seasons. There was really poor choices. ...They wouldn't let us do trampolining 'til we were in 5th an 6th year.
(Female, Jane, aged 19)*

In contrast, one respondent highlighted that in their school, the pupils got a democratic choice before some lessons as to what was delivered:

*We got a choice. We'd all go intae the big hall and get voting on different things like aerobics, volleyball and gymnastics.
(Female, Lauren, aged 16).*

Additionally, the notion of competitive sports held bad memories for some participants.

This was evident in both males and females who reiterated the notion that only those competitive sports, taught in a traditional method puts off the majority of older adolescents.

Many respondents identified PA with team sports, and consequently these adolescent school leavers identified PA primarily with competitive sport:

*Sometimes girls can be more judgemental than boys sometimes...but boys can be quite competitive. That put me off...I was quite glad when it was an all-girls class. I really don't like competitive stuff
(Female, Simone, aged 18).*

I mean just after I left school I couldn't be bothered exercising as I think that PE had sickened me, lots of people made fun of you if you weren't good at games like football... but, I am more active now.

(Male, Aaron, aged19).

Furthermore, the topic of PE at school raised some common barriers, not only related to the teaching but to the whole environment relating to changing rooms and the facilities available:

The teachers push you too much, like timing you in fitness testing, and while the trampolining was good being timetabled last period was bad. You didn't get much time, then there was the mingin³ changing rooms. (Female, Janey, aged17)

We didn't even have hair straighteners. (Female, Simone, aged,18).

The limited qualitative evidence that does exist from the current literature has touched on the role of self-image as a barrier to PA and school based PE. The following participant provided the first indication in this study that self-image may be a key theme in determining participation:

If you started fancying boys you'd get embarrassed. I hated if the boys and girls were in the same class and I felt uncomfortable. A felt uncomfortable wearing shorts but bitchiness ae lassies too. It still happens, girls judge you on how you look and look you up and down. (Female, Mandy, aged 18).

8.9.2 The role of image and its importance as a barrier and/or facilitator in exercise, PE and PA

One of the most dominant themes related to image, namely, self-image and the perception of what other people may think about them. Perception of competency, self-perception and body image appeared to be a main factor in determining previous participation in school PE

³ Minging-Colloquial Scottish language for smelly, dirty, and/ or ugly.

and PA and in PA not in the school setting. These factors were a major determinant for future participation in PA and exercise. One of the main reasons for either wanting to participate in PA or not to, was the issue of body weight, how fat ‘you feel’ or how important it is seen to lose weight.

*Now I'd exercise to lose weight, for a good image...so I look good for others.
(Female, Lisa, aged 18)*

*I've got really chubby. Lose weight for how I look. I want to look better”
(Male, Simon aged 18).*

*Ah hated (PE) as I was overweight. I had a huge bust and didn't want to do it”
(Female, Fiona, aged 17)*

As adolescents approach the age of 16 and the cessation of compulsory PE and they face college/vocational workplace transition, the idea of self-image, confidence and competence features as a dominant theme as a barrier to uptake/sustainability.

*When I got to 16 I found my confidence was lower, I felt tired all the time
(Male, Allan, aged 17).*

Image could stop you taking part... What puts me off if I've not ate anything and if I've felt heavier I become self-conscious. I don't then want to do anything. (Female, Jane, aged 19).

The importance of image and being in a relationship features in the following response:

*Weekends...Depends if you are single. When you are single, you like try and lose weight or keep in shape, but once you get a boyfriend it changes. I mean Darren goes to the gym before he comes up every night. I just lie about on my bed waiting on him coming up. Cos, you have a boyfriend you dinnae care. Unless it's coming up to the holidays or that. I then eat hunners of takeaways and junk food n stuff.
(Female, Lauren, aged 16).*

The idea of being competent and having confidence in yourself, together with judgmental peers appears to be one of the main factors in determining past and future PA and exercise.

This is highlighted by the following participants:

Self-confidence is one of my main reasons for not doing much. But in primary (school) they didn't care but towards end o high school and in college they are all watch h you and think look at her trainers and pure judging you. (Male, Alexander, aged 18).

(I'd exercise) For yourself... no for others. So that other people admire ye (Female, Isla, aged 17).

Whilst the importance of peer support is featured by the next respondent, there was a sparsity of data supporting the idea of peer support as a facilitator to exercise and PA.

Although I didnae like the body image when I turned 17 I wouldn't just say aw let's go tae the gym.... I do think it is to do with who your group of friends are. (Female, Lisa, aged 18).

8.9.3 Barriers and facilitators: The influence of social circumstances and environment

The circumstances of the transition period between leaving compulsory schooling to gain further qualifications, possible work and the development of different relationships and social circumstances also featured heavily in determining PA participation. This is particularly important as it forms the main part of the data required to investigate the main research questions in this study.

As you begin to leave school your social life takes over. Just going out...it comes to weekends you dinny want to be going to college and gym you'd rather go n see friends and relax and stuff. (Female, Megan, aged 16).

Not having enough time now is the main thing.

A come hame fae college and a sit and watch telly all night.... what would make you do something, hmm. (Male, Allan, aged 17).

Somebody to do it with me. Am a lot less active now...am tired all the time... Computers and that don't help. Just end up sitting about (Female, 18).

I used to be quite active up until last year just before a left school...Then a became lazy... What sort of things made that happen...Boys, social life, fags n drink (Female, Andrea, aged 17).

Surprisingly, environmental factors such as availability of facilities and cost of leisure facilities did not seem to act as a major barrier to PA. This could be due to the fact that many of the respondents lived in a suburban area. However, those respondents who lived in smaller outlying villages felt that facility availability was a barrier, as highlighted by the following respondent:

I mean, my village, has nothing, there is no gym or sports centre and to be honest I wouldn't really want to go out walking (Female, Andrea, aged 17).

8.9.4 Participation, improving PA and PE

As aforementioned, participation is thwarted by perceived image and lacks social acceptability amongst some adolescents. The crucial factor therefore is to ensure lifelong PA which, from the data provided seems to be heavily influenced by the educational experience during the school years. The whole ethos behind health and wellbeing in the Scottish CfE is to holistically prepare young people to be physically active and healthy for the rest of their lives. During the focus groups the participants were asked what would make them more physically active now, and how their previous PE experiences shaped

their PA habits now and how they would improve these areas to maximise opportunities for both school based and post school based PE and PA (Forsyth, 2014).

Given the emphasis that most participants placed on their previous PE experiences, a major theme emerged relating to the improvement of PE and how it could influence individuals as they continue throughout life. Much of this focused on gym based exercise and the type of PA on offer from commercial and local authority based leisure centres. For example, Lee (Male aged,18) stated that it would be more beneficial to continue with the type of exercise that the school showcased during a health week, activities that were experienced in the final year of school and that this type of exercise was the type that should be offered in PE in an attempt to promote PA and exercise to those who are not interested in competitive sport:

We should have got more health education about yer diet. (in PE) we needed stuff like Zumba, Metafit. Zumba, Like, the stuff that they done at health week. That's more enjoyable, as everybody joins in. It was like ropes, bootcamp stuff we all loved it, but after the instructors went, we ended up doing ping pong and stuff (with the PE teachers. (Male, Martin, aged 18).

Many of the comments related to individually led activities that could still be undertaken in a class format which could be enjoyed by all.

Circuits, gym Zumba and boxercise are stuff I would have liked even the boys would've like to do it. I know some of the boys would say aw look at that it's a girl's thing, but we had a day of it at school and they all liked it. (Female, Victoria, aged 17.

The overall message from the dominant themes and how these relate to acting as a facilitator to up taking activity can be summed up by the response from the following conversation:

We needed (at school) an emphasis on health-related exercise at school. I mean image could stop you taking part, but we need more choices and individual classes. (for me now) it has to be local enough, with good prices as classes can be dear. (Female, Jane, aged 19)

Aye. Now, it is about access and easy to get to, cheap facilities to help me exercise. If we want to go to the gym at our age it should be 2 pounds for the whole day. (Female, Jo, aged 17).

Definitely, last year we had PSE, and hardly any PE in 6th year, they should put it altogether into a fun package. (Male, Mark, aged 18).

8.10 Discussion

There is a paucity of qualitative evidence relating to the decline in PEPAS and exercise participation as young people reach the ages of 16-18 years and prepare to leave compulsory schooling. The findings presented here highlight that previous negative experiences of school PE were perceived as a major barrier to continuing PA. Respondents perceived that PE teachers focused primarily on physically capable students, leading others to feeling incompetent. This is an important finding as perceived competency has a major effect on future participation in PA. Additionally, the findings highlighted that most respondents identified PA with team sports.

The use of focus groups permitted a detailed insight into young people's perspectives of PEPAS. Consistent with previous studies focussing on school children and PE, the adolescents in this study identified similar environmental factors together with complex infrastructures relating to previous school-based PE experience that acted as participation barriers. Issues such as, for example, poor facilities, cleanliness of the changing rooms and

availability of showers and hair straighteners. Similarly, previous reviews have highlighted that access to adequate facilities and poor recreational infrastructures were perceived as major barriers to participation particularly in those from a low socio economic status (SES) (Allender et al., 2006; Allender et al., 2008; NICE, 2007). However, availability of facilities and amenities based in the community did not feature strongly as a barrier, when respondents were commenting on their current circumstances and how it relates to PA levels. Nevertheless, the issue of cost of facilities was touched on by one respondent. This accessibility of facilities may be due to the rise of leisure trusts working as partners with local councils in the area. Certainly, in the urban areas where the samples were drawn from, there was no shortage of leisure facilities.

Social circumstances were another issue identified as creating barriers to PA. This theme featured strongly during transition periods. Some respondents mentioned the issue of coursework at school or college. Others highlighted that at ‘transition’ age they preferred going out drinking, hanging around shopping centres with friends, and considerations relating to obtaining a girlfriend or boyfriend took priority over any physical activities or sports. However, this phenomenon was not observed if respondents had a partner or friends interested in leisure based activities. This expands on previous findings in the literature highlighting that PA during transition phases is heavily influenced by social networks. Nevertheless the development of these interests can be fostered by opportunities arising as a result of positive school experiences of PEPAS and exercise (Coleman et al., 2008; Cox et al., 2006; Martins et al., 2015). The issue of PA decline as a direct result of attending further or higher education was perceived as a barrier for several respondents. This may

occur not only as a result of gaining independence from school, but as a result of the accumulation of life stressors compounded by the stress of exams and coursework: all factors which may ultimately impact PA participation (Gibson et al., 2016).

This study adds to the limited existing literature by focusing specifically on a sample typical of the school leaver population in Scotland. Additionally, most of the previous literature is quantitative by design and, crucially, tends to be focussed on students' intent on attending University.

Perhaps the strongest opinions relate to the teaching methods experienced during PE lessons, the activities on offer and the fact that many of the respondents believe that this may be a main determinant in whether they continue activities after they leave school. By way of example, a large majority of the respondents relate PA, and the PE taught in school, to competitive sport. This perception, coupled with the perception that they were not competent at sport, leads to a higher probability of declining PA participation. Thereby further contributing to a Post 16 gap. These opinions echo the findings of Sproule et al. (2011) who highlighted that those who disliked games that were taught in a traditional style did so because of their low level of perceived competence.

A perception of low competency in PEPAS has been previously identified in the limited, existing qualitative literature (Martins et al., 2015; Brooks and Magnusson, 2007; Gray et al., 2008; MacNamara et al., 2015). In fact, this is a particularly prevailing theme in respondents when mixed gender PE classes are taught (Allender et al., 2006). Those who

commented that they felt incompetent, although affected by previous PE experiences, felt that they would now look at some form of individual activities. This concurs with the findings of Cox et al., (2006) who reported that adolescents felt that they would not be as self-conscious of participating in activities if there were beginners 'fitness type' classes available, as this would help them overcome the stigma attached to school PE.

This is the first Scottish based, qualitative study to directly address declining PA levels as young people leave compulsory education, thereby contributing to the post -16 gap. The study aimed to carry out an in depth qualitative analysis using focus groups to analyse how the perceptions and beliefs that young people have of PE and PA influence future PA.

Previously, there was a paucity of literature relating to this. Since the inception of this thesis one study, namely the 'Big PE conversation' has commenced investigating whether school PE effects future PA participation? This quantitative survey conducted by the PE research team at University of Birmingham produced several qualitative opportunities and indeed the findings presented here seem to concur with their pilot findings (Goodyear, 2016).

The current study presents novel findings in the respect that it highlights that young people perceive a need for a greater implementation of current fitness trends and leisure based PEPAS lessons to target a young, image conscious audience. It appears that the interest in games is in decline by S4. Previous authors have reported that leisure based choices in PE are essential to promote lifelong PA (Fairclough et al., 2002). While curriculum content may be an issue, many of the respondents commented on the teaching methods used by

their PE teachers. The issue of traditional teaching methods in PE and their role in promoting the ethos of lifelong health has recently resulted in an emerging body of evidence in the literature, with an agreement for placing the child at the centre of PE with less emphasis on the didactic teacher approach (Bailey et al., 2009b; Kirk, 2005; Kirk, 2013a). Additionally, the role of image and its link to body consciousness, poor self-image and obsession with weight control seem to be dominant amongst many females in this study. It is clear from the data that young people are concerned about image and ‘feeling large’ and that this makes them self-conscious and, in some cases, intimidated by the PE environment. What does cause concern is that certain activities in PE may lead to the perception of being intimidated or bullied by either their peers or even their PE teacher. These issues again question the content and delivery of the curriculum. Concerns over bullying by peers were highlighted during the participation of team games. This corroborates previous findings conducted on a school aged sample, where pupils from S1-S2 felt that team games and fitness testing created an opportunity for bullying. This in turn may affect their future participation as adults. In line with the recommendations of Cale and Harris (2013), “PE teachers need to understand, be sensitive to and address the challenges” therefore ensuring that every child matters (Cale and Harris, 2013). Furthermore, some respondents have addressed the issue of their teachers not being in shape and highlight that they are overweight. This issue of weight management and PA has been previously addressed by Prusak et al., (2011) who suggested that if PE staff are ill prepared to address their own weight and PA issues then they are certainly not in a position to advise pupils on their weight and PA levels.

Additionally there is the suggestion that, at the senior (post16) phase of CfE, any attempt to gain the physical skills necessary for an active lifestyle is predominantly futile, and largely remediation (Jess and Collins, 2003). The continuation of participation is dependent on the development of perceived competence during quality PE. As quality PE not only develops perceived competence of movement but addresses the development of physical literacy and the more complex movement skills required to sustain a physically active life (MacNamara et al., 2015; Giblin et al., 2014a).

Kirk (2013b) highlighted the necessity of a move away from traditional PE lessons towards a pedagogical model approach in order to foster a greater level of intrinsic motivation. This relies on the PE teacher to create a warm supportive environment that addresses the innate needs that govern self determination, namely autonomy, competence and relatedness (Deci and Ryan 1985;2002). The issue of lack of activity choice, poor perceived competence and non- supportive PE teachers all feature in the data presented here. This emphasises a need for change in how PE is structured and delivered in some schools in order to enhance its role of lifelong activity (Kirk, 2013b).

An argument exists for mandatory core PE across all ages, in all schools in Scotland. Previous suggestions relate to the compulsory teaching of religious education which continues beyond S4. The counter argument ripostes that this senior phase of CfE is not compulsory, and the overall health and wellbeing ethos of CfE could be upheld if PEPAS were made so attractive in terms of both content and delivery that every young person wants to participate in some form of sustainable activity (Wood, 2006). There is a need for

physical educators to place more emphasis on teaching strategies that create an effective, encouraging motivational climate for learning, therefore increasing perceived competency whilst engaging the learner in a choice of tasks that help to promote lifelong PA.

8.10.1 Methodological Strengths and Limitations

The use of a qualitative based study was deemed necessary to gain an in-depth insight into the barriers and facilitators of those at the transition stage of adolescence. The need for further qualitative research had been recommended in the literature reviewed. The use of focus groups allows compact collection and analysis of rich detailed data. The procedure of a purposive sampling methodology ensures a sample representative of the requirements of the study, easily allowing comparisons between opinions of various schools and its surrounding area. However, the use of focus group studies involved a relatively small number of participants. As a result, the findings of this study may not be generalisable. This study was designed to capture opinions and perceptions of adolescents within a specific geographical location, using a clearly defined purposive sample. However, focus groups and group interaction in general may compel participants to concur with opinions that they may not necessarily believe themselves. This is due to a desire to be socially accepted within a group. Furthermore, bias due to dominant participants or an over-dominant moderator may also compromise validity. However, the use of a core set of questions within a moderately structured focus group helps eliminate moderator bias, whilst minimising ‘monopolisation of the discussion’ by participants (Morgan et al., 1998; Huston and Hobson, 2008).

The sampling strategies employed in the present study may compromise validity. Indeed, since the participants were all volunteers, there may be a self-selection bias. Responses from the initial questions derived from the topic guide showed, however, that whilst most of the participants were fully aware of health issues and campaigns, a variety of opinions and misconception arose regarding the questions in the topic guide. This suggests that most participants did not have substantial knowledge on the topic. Furthermore; responses from the participants did not suggest that they were participating due to their enthusiasm for the topics.

8.11 Conclusion

This work demonstrated a clear perception, from many respondents, of an overemphasis on gifted sportspeople. Thereby suggesting a need for modified activities, de-emphasising a sole proficiency in competitive games. The work conducted suggests several recommendations:

1. There appears an evident need for Physical Educators to place more emphasis on sustainable, personalised PA.
2. The implementation of core PE for all pupils above S4 should be prioritized, by making it attractive in terms of content and delivery.
3. Additionally, a multi-dimensional approach for encouraging pupil engagement within school PE is recommended: this should involve advocating more ‘choice’ during school PE with greater diversity of activities and, the

implementation of a model based approach to PE teaching across all phases of CfE.

4. Amalgamation of contemporary activities into the curriculum, potentially utilising new technology and following current fitness industry trends may enhance PA promotion in post-16 adolescents and encourage participation for those currently at school.
5. Further exploratory initiatives should be focussed on increasing the attractiveness of mandatory PE timetables for all in S5 and S6 embracing choice but not neglecting the learning aspects of PE.

Crucially, the messages emanating from this study should not be interpreted as being ‘anti’ competitive games. Instead, a more learner centred approach to teaching games should be implemented (Gray et al, 2017). The use of contemporary models based teaching with a focus on PE strategies founded on consistently positively influencing participation are logically suggested to better erode the current existing barriers related to perceived and actual competence. The PE curriculum at this stage should also provide choice without compromising the educational aspects of PE. This could embrace current fitness trends, as suggested by the data in this study, but must contain an educational component rather than become managed recreation. In addition, the role of Physical Literacy (PL) cannot be ignored, and Physical Educators –should prioritise the development of PL at the appropriate stages, so as to establish purposeful physical pursuits as a lifelong activity habit (Murdoch and Whitehead, 2012). Accordingly, emerging research should focus on both the

development of PL in the young, and the remediation of PL for the age group who are targeted in this study.

What this study adds

- *Previous negative experiences within PE contexts were perceived as a major barrier to continued PA.*
- *Respondents perceived that PE Teachers focused primarily on physically capable students, leading to feelings of incompetence in others.*
- *Core PE sessions should embrace current fitness trends but have an educational component.*
- *Game based lessons should be based around pedagogical models to promote self-efficacy and intrinsic motivation.*

What is the novel element of this study?

- *This study is one of the few studies that qualitatively investigates the barriers and facilitators of PA, Sport and exercise in 16-18-year olds.*

Figure 5: Summary of Research Study 4

CHAPTER 9 – THESIS DISCUSSION

9.1 Introduction

This thesis concentrated predominantly on the role of PEPAS and exercise in combatting the negative health status of the Scottish population. A key conclusion emanating from this thesis is that PA during school years should not be the primary focus of PE. Instead, a more appropriate *core raison d'etre* of PE should be to create both an enthusiasm for PA, and sufficient movement experiences and expertise to provide a platform for lifelong activity (Kirk, 2013b). From a personal perspective, I wanted to explore the role I, and other like-minded PE professionals, may play in facilitating PEPAS. Furthermore, by investigating the barriers relating to lifelong activity and how it relates to the transitional periods of adolescence. (Kirk, 2013b; Murdoch and Whitehead, 2012).

In the initial study of this thesis I aimed to explore the potential drivers of Scottish health and the associated Scottish and Glasgow effects whilst highlighting shortcomings that I have become aware of in my professional domain as a PE teacher. In Chapter 4 (research study 1), I suggested that a confluence of social, environmental, attitudinal and cultural stressors may combine to negatively influence biological health. Through this lens, stakeholders should consider the stress remediating role of PA, and the problems presented by barriers to participation in PA and exercise. Reflecting on my own personal and professional experience as outlined in Chapter 1, I sought the answer to the broad research

questions does excessive biopsychosocial stress impact on PA? What are young people's perceptions of PEPAS, exercise and health? What are the barriers and facilitators to post 16 PA/exercise and Sport. What effect does school based PE have on us as we leave or prepare to leave school? This final question is pertinent to creating sustainable PA habits as we transition from childhood to adulthood.

To address these issues, I developed each question into individual research studies as outlined in Section 9.2. This discussion chapter therefore aims to analyse the findings from the four main research foci addressed in this thesis. The discussion commences by reiterating the four main research foci as outlined in the next section.

The purpose of this chapter is to collate findings from this programme of research. To address the research objectives in the thesis, I developed four research studies as outlined in Chapter 3:

1. To investigate the Glasgow effect and investigate the relationship between accumulative, biopsychosocial stress, stress reactivity, and health behaviours —with specific reference to PA in adolescents.
2. To determine if a significant difference existed in uptake of PA between adolescents (16-18 years old) who have experienced high life stress, in comparison to those who have not, whilst also investigating the relationship between these factors.
3. To explore adolescent's attitudes to behaviours such as PEPAS diet and substance use and determine the key influences impacting upon health habits and perceptions.

4. To investigate why some young people, continue to participate in PA sport and exercise, while others may not.

The discussion of the findings is organised systematically following the chronological order of the thesis.

9.2 The health of the nation: messages from research studies 1 and 2

In research studies 1 and 2, contained in Chapter 4 and 5, I looked at Scottish health habits through the lens of excess mortality in Scotland, as characterised by the Scottish effect. Additionally, the similar but less well-documented phenomena within Glasgow and its surrounding areas is also accounted for.

9.2.1 Analysis of research study 1

In research study 1 (see chapter 4), it was proposed that there is a confluence of social, environmental, attitudinal and cultural stressors, which combine to negatively influence biological health. Additionally, the accumulation of life stressors contributes to negatively influence biological health with the accumulation of life stressors contributes to poor health outcomes. Subsequently resulting in poorer mortality rates. The outcomes of research focus 1 suggest that stress-related factors (environmental, psychosocial, and biological) may play a key role in the disproportionate gap in poor health outcomes within Scotland. Despite the entwined social, cultural, geographical, genetic and personal history underpinning our health problems, PA offers the most readily accessible and pragmatic method of remediating the negative stress-related consequences suffered by those experiencing excessive life stress.

This study also identified the possible, bi-directional relationship between PA and stress resilience. This further underscores the criticality of embedding early, life-long PA habits, especially in populations at heightened risk of stress-related health impediments. Consequently, the method of PE delivery and the appropriate training of physical educators may play a crucial role in fostering the positive culture change associated with ensuring sustainable PA. Additionally, it was proposed that there was a need for qualitative evidence focussing on the barriers and facilitators to PA in adolescents as they approach the end of compulsory schooling.

9.2.2 Highlights of research study 1

- Evidence explaining the Scotland and associated Glasgow effects remains elusive.
- This study suggests that accumulating life stressors predispose Scots to a wide-range of health disorders.
- PA and excess life stress are reported to have a negative relationship and may potentially be bidirectional, we highlight the remediating role of PA.
- Overcoming barriers to participation in PA and exercise at transitional stages of life is crucial.
- Physical educators should play a role in fostering positive culture change.

9.2.3 Analysis of research study 2

Research study 2 (chapter 5), added to the current literature by highlighting the remedial effects of PA on some of the negative consequences of excessively accumulating stress as

previously discussed in research study 1. Furthermore, I presented results of a novel investigation conducted on 16-18 year olds demonstrating the negative and possible bidirectional role of PA and stress (Cowley et al., 2016). In demonstrating the negative relationship between PA and stress, the data exhibited that adolescents with higher stress scores were less likely to be physically active. No previous research has investigated the interaction between stress and PA in this age group in Scotland. Adolescents from a low SES background, who had experienced extensive life stress as reflected by their total stress scores, were compared with more economically-affluent matched-controls. These findings add to existing evidence suggesting that stress during adolescent transition periods impedes PA uptake. There is also considerable evidence for the bi-directional role of stress and PA. Most crucially, physical educators should incorporate the stress remediating effects of PEPAS into school practice and strive to inculcate physical activities that have a ‘carry over’ into adulthood, promoting sustainable PA, especially with adolescents likely to have been exposed to excessive stress loads during critical developmental periods.

The literature shows us that negative health behaviours, such as low levels of PA, may be embedded within Scottish culture. By way of example, O’Brien et al., (2009) highlighted that Glasgow males perceived that young men who engaged in regular PA, when they ‘did not need to exercise or worry about their diet’, were less masculine than men who did not engage in healthy habits: an interesting and telling reversal of traditional associations of masculinity with fitness. Additionally, Scottish males treat taunting from their peers about their appearance (being overweight or bald) as ‘banter’ (Gray et al., 2011; O’Brien et al., 2009). The relevance of these findings from the literature made conducting qualitative

research even more important, due to its ability to capture rich in-depth thoughts, feelings and perceptions. The findings throughout the qualitative research foci in this thesis reflect the importance of this as a barrier to healthy living. These deep-rooted beliefs, attitudes and perceptions conspire to add to the cumulative cultural stress burden to which individuals are exposed.

Accordingly, to encourage health and wellbeing, and to remediate the negative consequences of unrelenting life stress, the promotion of lifelong PA appears an important and cost-effective strategy (Cowley et al., 2016). PE and health and wellbeing education present an excellent opportunity to counteract this attitude and in education relating to stress and the associated health disparities. Whilst the ‘here and now’ approach to promoting PA, within PE, may address these issues in the short term, they do little to promote sustainability—an issue that we address in the summary of research studies 3 and 4. Nonetheless, PE philosophy and the appropriate training of physical educators may subsequently play a crucial role in fostering the positive culture change, associated with ensuring sustainable PA (Cowley et al., 2016).

9.2.4 Highlights of research study 2

- Excessively accumulating life stress not only diminishes health but simultaneously reduces PA uptake in vulnerable populations.

- PA levels were shown to significantly differ in those adolescents who displayed high stress scores, when compared their peers who had been subjected to less accumulative life stress.
- The findings presented here add to the evidence-base illustrating that prior stress impedes PA uptake during transitional phases of life.
- These findings support proposals that conventional PE practice should be reframed to not only provide PA during school years, but to promote educational content to increase lifelong interest in PA.

9.3 Qualitative Investigation into the health of the nation. Research studies 3 and 4

Subsequent to these initial investigations, I followed on with research studies 3 and 4, contained in Chapter 7 and 8, which aimed to qualitatively analyse the thoughts, feelings and perceptions of a sample of young people. In research study 3 (Chapter 7), I focussed on adolescents in S1-S4 while research study 4 (Chapter 8) was aimed at those leaving or who had already left school but who would be deemed to be in the senior phase of the Curriculum for Excellence (CfE). I was also keen to highlight the role of new technology in the promotion of health and wellbeing in this group. This could be implemented using the methods recommended by Casey et al., (2016) as outlined in Chapter 11. Additionally, it was made clear that image and social acceptance play a major role in determining attitudes towards PA.

9.3.1 Analysis of research study 3

Research study 3 (Chapter 7), concentrated on the broad general education phase of CfE.

The desire to fit in and the need to maintain an image of being cool were both influential in determining attitudes and beliefs important to ensure PE participation and, crucial in determining unhealthy health activities such as smoking and drinking. PE was mistakenly perceived as something that ‘you are good at’ a perspective reflecting a fixed mind set (Dweck, 2017). This is of importance as the extant literature shows that peer conformity and a feeling of mastery are important precursors for PE participation.

This presents a key barrier in ensuring PEPAS participation and adherence in adolescents, which is particularly important in ensuring that they remain active throughout life. It was determined that new initiatives must aim to be socially acceptable to adolescents and that teachers should encourage good practise that is fully inclusive. Some young people expressed concern about being bullied or being made fun of, either because of not being in the “cool” group but also to conform to the cool image. Many young people from this sample were critical of the PE curriculum and felt that that the curriculum was not tailored enough to each individual pupil. Therefore, this may not create the best environment to promote sustainability. The implementation of fitness testing and overreliance on competitive sports were particularly seen as barriers to current PE participation which may deter individuals from being physically active in the future. However, as pointed out earlier in the thesis, there is a convincing case that, by this age, attitudes are already somewhat fixed. As such, while the focus of this study was at the S1-S4 range, there also appears to be significant potential for interventions in younger age groups (Giblin et al., 2014b).

Currently, there is an apparent ethos within PE that focuses on an “activity today”, one size fits all approach, structured around blocks of activity. This approach tends to focus on the quantity of time spent in activity rather than building an important foundation to promote sustainable PA for life. (Giblin et al., 2014b; Kirk, 2013b; Fairclough et al., 2002). The traditional focus on isolated skills and drills are more likely to produce a cycle of perceived incompetence (Fairclough et al., 2002).

Interestingly, in an attempt to address the health problems in Scotland, the Scottish Government have stressed that every child from S1 to S4 should participate in two periods of quality PE every week, additionally, two hours of quality PE was defined as the participation level for primary aged children. It may be the case that somewhere along the development of the new curriculum and guidelines, there has been a miscommunication where the promotion of long term PA and positive health behaviours is secondary to the quantity, rather than a focus on the quality and learning impact of the lesson (Giblin et al., 2014b). Additionally, the overall emphasis may be seen as a combatant to the emerging ‘obesity crisis’ (Kirk, 2006; Kirk, 2013b).

9.3.2 Highlights of research study 3

Research focus 3, (Chapter 7) highlighted the importance of PEPAS and health and wellbeing in the lives of young people. Further noting how image, and the fear of not being

accepted by their peers, not appearing cool and the fear of being bullied if they do not fit culturally accepted norms, may affect them. The concluding points were emphasised:

- Most pupils are aware of current health and wellbeing messages and public health guidelines.
- Self-image and appearance are dominant issues to many young people, together with peer conformity.
- Traditional PE lessons that prioritize sporting ability, can act as a participation barrier to pupils who consider themselves ‘non-sporty’.
- Activities where individuals may be singled out, such as fitness testing present barriers to participation.
- Accordingly, a shift towards pedagogical models, rather than simply blocks of sports-related activities should be the priority of educators.

9.3.3 Analysis of research study 4

Research study 4 (Chapter 8) concentrated on the senior (transition) phase of CfE. This study presented an overarching theme where young people, who have left non-compulsory education, are deterred from PA because of previous PE experience, with many commenting that they would like a broader range of more modern activities. At the time this research was conducted, there was a paucity of qualitative evidence, particularly in the UK, investigating the reasons for the immediate post 16 gap- (the drop off effect on PA that occurs as young people leave compulsory education). Several key barriers and facilitators of participation in PA were identified. In this regard, I recognise the importance of other

factors in determining PA engagement and the fact that PA in adolescents is a multi-theoretical, complex issue (Welk, 1999).

Moreover, issues such as parental support, peer support and social circumstances in determining PA participation are all critical. The data highlights that participation in certain activities during PE led to the perception of being intimidated or bullied by either their peers or even their PE teacher. These issues again question the content and delivery of the curriculum. Concerns over bullying by peers were highlighted during the participation of team games

Echoing the perspective of earlier school life, previous negative experiences of PE were perceived as a major barrier to PA. Respondents perceived that PE teachers focused primarily on physically capable students, leading to others feeling incompetent. Perceived competence has a major effect on future participation in PA. These findings were recently echoed by one unpublished survey, conducted on an adult population, which showed that 37% of women and 26% of men rarely enjoyed PE, while 47% reported that PE had not helped them to be more physically active as adults (Goodyear, 2016).

Of relevance, most respondents identified PA with team sports. Respondents commented that low access to current fitness activities, such as Zumba and Metafit, were barriers to participation. Furthermore, the initiation of core PE for all pupils above S4 was supported and should be implemented. There is a need for Physical Educators to place more emphasis on teaching strategies that create an effective, encouraging motivational climate for

learning, therefore increasing perceived competency whilst engaging the learner in tasks that help to promote lifelong PA. PE taught in the traditional method appears to be failing in its ability to promote sustainable PA and may, in fact, serve to discourage future participation due to the use of a behaviourist approach, which many young people find demotivating and not fit for the 21st Century (Kirk,2014b).

Previously, there have been several approaches that researchers have reported as useful in engaging pupils in PE to promote sustainability. Changing the curriculum content to activities that involve lifelong activities is one such approach as proposed by Fairclough et al (2002). Whilst more recently the adoption of pedagogical models is seen as the optimal approach to address the limitations of the traditional approach to PE (Kirk, 2013a).

However, the problem is complex and may require more than just an either-or approach. Accordingly, it seems a multidimensional approach is required to encourage lifelong activity, one which supports the learners needs to feel competent, to have autonomy and to have a sense of relatedness with their teachers and peers.

9.3.4 Highlights of research study 4

Research study 4 (Chapter 8) highlighted the key barriers and facilitators of participation in PA sport and exercise in 16-18-year olds. The barriers and facilitators cited by respondents are similar to those described by those who previously expressed a dislike for participating in core PE (Allender et al., 2006).

- Previous negative experiences within PE contexts were perceived as a major barrier to continued PA. Respondents perceived that PE teachers focused primarily on physically capable students, leading to feelings of incompetence in others. This perceived incompetency exerted a major effect on future participation in PA.
- Most respondents equated PA with team sports. Respondents commented that low access to current exercise and fitness trends were barriers to participation, particularly in schools.
- Recommendations arising from this study focussed on embracing current exercise industry trends but not at the expense of traditional PE based activities. Rather, there should be a shift in the way in which these activities are delivered.
- The educational component of PE can be enhanced by adopting a pupil centred ‘model based’ approach.

9.4 Towards a multidimensional approach

It is important to understand that addressing the barriers to PEPAS, particularly in those adolescents undergoing transition periods, is one of the key objectives focussed on within this thesis. Whilst the problems encountered in Scotland, and more specifically Glasgow, are multidimensional, the approach of embracing the need for a curriculum that helps promote lifelong PA. This is a complex issue, for example, some of the respondents in research study 3 and 4 suggested that by simply changing the curriculum content to fitness based activities and incorporating current exercise trends would help to involve the

disengaged. However, it is my belief that such complex problems also require a multidimensional approach. When looking at the evidence surrounding curriculum change, it is apparent that those preferring fitness and dance activities may be extrinsically motivated with image related issues such as appearance, body weight and muscle tone the dominant factor. Significantly, however, these activities may not track greatly into adulthood and have been reported to be a poor predictor of adult PA levels (Bélanger et al., 2015). Paradoxically, these activities have been positively associated with psychological wellbeing, increased self- esteem and reduced anxiety.

The overall recommendations of this thesis do not condone the decline of team based games or sporting activity. Instead, the conclusions highlight the relevance of a contemporary MBP based curriculum that addresses learning in the physical, cognitive, social and affective domains would enhance intrinsic motivation for PE and future activities (Casey and Goodyear, 2015; Casey, 2014). The recent work of Gray et al, (2018) highlighted the potential of a learner centred, games focus approach in PE to promote individualised learning and autonomy using self determination theory as a framework. This application of pedagogical models is reported to be more effective in motivating the needs of the learner by increasing enjoyment, autonomy and giving them a sense of mastery of the learning activity, therefore increasing perceived competence (Gray et al., 2017; Gray et al., 2018). Further amalgamation of contemporary activities into the curriculum, potentially utilising new technology and following current trends within the fitness industry, may enhance PA participation in post-16 adolescents, whilst also increasing participation in

those currently at school. However, caution should be merited, as any activity implemented should have a PE content rather than solely focusing on a ‘here and now’ PA approach. This would aim to develop perceived movement competence, which positively correlates with adult PA participation (Giblin et al., 2014a; Giblin et al., 2014b; Bélanger et al., 2015).

According to Harter’s model, actual competence is a precursor to perceived competence (Harter, 1982). Children who perceive themselves to have low skill proficiency are more likely to be less active- whilst the relationship between actual competence and perceived competence may affect an individual’s PA choices (Bélanger et al., 2015). For this reason, it is deemed necessary to develop fundamental movement skills, progressing to more complex movement patterns during the primary education phase. This area requires further investigation to develop effective evaluation tools in order to assess the complexities of movement and their implications for sustaining PA throughout life.

Although limited in sample size, this research is novel in the aspect that it confirms the beliefs of some of the more subjective literature that exists in this field. By way of example, in their recent book Murdoch and Whitehead (2012) stated that the current PE approach leaves many learners with a negative experience of PE and ,as a result, they are unlikely to continue to take part in PA out of school or after they leave school (Murdoch and Whitehead, 2012).

Previously, there was a paucity of qualitative evidence confirming this belief, particularly in Scotland. The data presented in this thesis highlight the negatively held perception that individuals have of the curriculum content, seeing it as mainly ‘games based’. Additionally, many of the respondents in research focus 3 and 4 commented negatively on the teaching methods employed by their PE teachers. Reporting that they tended to follow a curriculum focused on sporting technique, with the aim of building sporting prowess.

The traditional approach to teaching team games in PE tends to focus on developing individual skills before placing them in to the context of game (Gray et al., 2008), a form of education that Kirk (2013a) refers to as sports techniques, which has dominated PE since the 1960’s. The limitations of the traditional teaching of isolated skills and drills during PE has resulted in an emerging body of evidence offering alternatives to this ‘didactic’ doctrine. An approach placing more evidence on ensuring that the child is at the centre of the PE lesson, and less emphasis on the instructive teacher-led conventional approach (Bailey et al., 2009b; Kirk, 2005; Kirk, 2013a; Kirk, 2013b).

9.5 Discussion of this chapter

This chapter aimed to recap then discuss the main findings of this thesis. Firstly, this thesis highlighted the compounding effect of a unique blend of accumulating life stressors that may predispose Scots, and particularly socially-disadvantaged Glaswegians, to a wide-range of health disorders. In short, a convergence of social, environmental, attitudinal and cultural stressors combines to negatively influence biological health. The data in chapter 5,

highlights the importance of PA and the role that PE /health and wellbeing may play in decreasing compounding stressors. Whilst there remains the argument that PE is not solely about improving short term health goals for the nation (Kirk,2013b), great debate remains around the fact that PA in the long term may play a major part in helping to solve these health problems (Cale and Harris,2013; Kirk, 2006). Ultimately, we must look beyond the short-term accumulation of PA during PE lessons and aim to instil movement confidence from an early age (Corbin,2002; Cale and Harris, 2013). Indeed, the implementation of PE into the health and wellbeing area of the curriculum in Scotland is one such move aimed at promoting holistic health through lifelong PA. As previously mentioned, the drive towards a holistic approach has emphasised that PE should have two main goals: (1) To prepare for a lifetime of PA and (2) to engage pupils in moderate to vigorous PA (Kohl and Cook, 2013, pp 197-201).

Whilst ensuring PA during PE lessons is maximised can be seen as a positive ambition, this should not be at the sacrifice of learning during PE lessons. Particularly when at the expense of maximising the movement education necessary to establish a “solid foundation for further and future PA opportunities” (Cale and Harris,2009; 2013). The move towards a more holistic, inclusive approach requires a transformation of PE to an increased emphasis on learner centred lessons.

Whilst a majority of previous research is focused on the secondary school, the outdated focus on blocks of activity with traditional teaching methods are particularly strong in Scottish primary schools, where teachers have become acculturated as a result of their own

personal experience of PE (Jess et al., 2016). Kirk (2013) boldly argues that if there were to be a choice made for PE specialists in primary or secondary, then priority should be given to the primary stage as this is when perception of competence and motivation is formed, hence affecting the engagement of the learner in PE and PA. Although it could be argued that the use of appropriate pupil centred approaches and the move away from a skills and drills, multi block approach can increase enjoyment and motivation in both primary and secondary aged children (Gray et al,2016; Gray and Sproule, 2011; Gray et al., 2009; Carse, 2015; Bailey et al., 2009b). The data in this thesis concurs with the previous literature which emphasised that there may be an overreliance on performance related sports taught using “dull uninspiring drills and disconnected skills” whilst health based lessons emphasised questionable practice such as fitness testing which the participants within chapter 7 highlighted as one area which promoted non- participation.

Despite this, some clarity is emerging as to the rationale behind the belief that emphasis should be placed on primary schools (Jess et al., 2016). Recent literature has demonstrated the importance of essential movement skills through quality, structured PE during early years and the primary phase of education. Furthermore, childhood motor skill proficiency during these stages impacts on adolescent PA and fitness (Barnett et al., 2009).

Additionally, it is understood that the development of these movement skills is essential in ensuring intrinsic motivation through the interplay between actual competence and perceived competence which increases the possibility of children's participation in a variety of PA throughout their lives (Barnett et al., 2009; MacNamara et al., 2015; Haywood and Getchell, 2009).

9.5.1 The importance of perceived competence

As reported in research study 4 (Chapter 8), it is acknowledged that perceived competence is a stronger predictor of future participation in PA than actual competence. Children with a high perception of competence are more likely to engage in PEPAS despite their level of actual competence although the development of both of these factors are important to allow the child to execute a range of complex and combined movement skills; therefore, giving the child the ability and confidence “to have a go” (Giblin et al., 2014b). Developing a proficient physical skill level to match children’s’ high perception before this discrepancy becomes a mediating factor on their experience of PE could enhance future PE and PA engagement (Giblin et al., 2014b). Moreover, Stodden (2008) proposes that task execution is not just dependent on an individual’s self-perceptions of ability but rather, that children who have lower ‘actual’ motor skill competence will demonstrate a lower perceived motor skill competence, resulting in a negative spiral of engagement. Whilst during late childhood and adolescence individuals are more aware of their perceived competence. (Jess and Collins, 2003; Stodden et al., 2008).

Interestingly, Chapter 8 in this thesis qualitatively highlights that previous negative PE experience was reported to affect future participation in PA in those individuals in the post 16 years old age group. This is a novel finding and has important implications when considering the role that PE is reported to have in ensuring lifelong PA. Despite this, there remains a lack of evidence pointing us in the direction of remediating those in the 16-18-year-old age group who may be lacking in physical literacy, and therefore, who hold a low

level of perceived competence. The issue remains open to debate as clearly PE needs to reinvent itself to adjust to the 21st century. Whether this reinvention is dependent on a change of teaching methods, the addition of more recreational activities in the curriculum content or a combination of these is an area receiving limited attention. What is evident, nevertheless, is that despite a growing body of evidence towards the need for curriculum change and a need for a change in teaching practice, is that many PE teachers are “impervious to change” (Prusak et al., 2011). Kirk (2013b) states that although many teachers are aware of the need to ‘renovate’ the curriculum, this would require a great deal of work on the teachers and schools’ behalf. Additionally, resistance to change seems to exist as a legacy from outdated teacher education practices, which also requires reform. In short, many PE teachers have become accultured (Kirk, 2013b). Current research in the area of alternative teaching approaches, has reflected a change in pupil autonomy, decision making and enhanced enjoyment as a result of a change in teacher behaviour where the emphasis is on self-regulated skills for the learner (Gray et al,2017).

9.6 Conclusion

This chapter analysed the main research foci of the thesis. It started by reviewing the broad research questions, followed by analysing these in a chronological order. Lastly, I addressed the need for a multidimensional approach to a complex problem and how my findings relate to previous research. Through the lens of the Glasgow effect it was suggested that the promotion of long term PA could be achieved through a move towards a holistic approach to PE and health and wellbeing education. The reinvention of PE as we

know it, may be required in order to facilitate such change. The next chapter looks at the further development of these proposed solutions.

CHAPTER 10 – CONCLUSIONS, SOLUTIONS AND NEXT STEPS

10.1 Introduction

This chapter aims to conclude the thesis by developing proposed solutions to the issues highlighted in Chapter 9. It begins by broadly looking at health and wellbeing and PE in Scotland's schools, before looking at pedagogical models as a method of building intrinsic motivation for sustainable participation. Lastly the chapter finishes by proposing PE-based solutions to help sustain PA beyond 16 years of age.

10.2 Proposed solutions - a long term fix?

10.2.1 Health and wellbeing in Scottish schools

In chapter 4 (research study 1) I concluded that PE philosophy, and the appropriate training of PE teachers in the area of health and wellbeing, may play a crucial role in fostering a positive culture of change. As mentioned throughout this thesis, PE was embedded into the health and wellbeing curriculum under the revised CfE. However, in a professional context I would suggest that current health and wellbeing teaching strategies and curriculum content have become disjointed in many schools. This may be down to variations in resources or poor communication between teachers who teach the written elements of health and wellbeing. The use of a more collaborative model for health and wellbeing, together with addressing sustainable factors that combat stress may be one such issue which helps to establish a connection between the holistic aspects of PE/health and wellbeing. The

key document from CFE, outlining the range of experiences and outcomes that schools are required to deliver as part of their curriculum highlights that:

The World Health Organisation describes mental health as: 'a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.'

Based on these contentions, as reflective practitioners, we need to ask ourselves whether current practice optimally guides young people towards the building of effective strategies mitigating against mental health issues? For the moment, this question awaits further explicit attention in subsequent studies, which may form part of my future plan.

10.2.2 Towards sustainable PA: The importance of the foundation phase

The data presented here suggests that many current recommendations are not being disseminated fully into practice. PE programmes are making little progress in provisioning a firm foundation for lifelong PA (Jess and Collins, 2003). Consequently, I suggest that the outdated traditional form of PE delivery is clearly failing to prepare future adults for lifelong PA (Kirk, 2013b).

Whilst this thesis has a large focus on Post 16 participation and lifelong sustainability, it is imperative to understand that the foundation of lifelong PA is established primarily throughout in the early school-going years (Jess and Collins, 2003; Giblin et al., 2014a; Giblin et al., 2014b; MacNamara et al., 2015; Kirk, 2013b). Although I will later address what may be done in the current climate for individuals around the transitional phase of

non-compulsory education, it is necessary to primarily address the foundation phase to make future recommendations. Critically, great attention should be dedicated to the establishment of EMS. Developing competence of these essential movement skills is imperative to building the perceived competence associated with improving and increasing PA. (Stodden et al., 2008; Giblin et al., 2014a).

In this regard, Giblin and colleagues (2014b) proposed the use of deliberate preparation, with the prioritisation of quality skill acquisition in PE. Not only does their proposed model involve the development of essential and complex movement skills, it also addresses the ‘fitness today’ approach which focusses on short term PA whilst neglecting the long term educational component of PE. Currently there is no standardised program for developing these skills. Additionally the authors emphasise that the problem with current PE programs is the lack of empirical evidence, due in large part to the absence of standardised assessments measuring these skills (Giblin et al., 2014b; Giblin et al., 2014a). Currently, most evaluation methods fail to assess the type of complex movement patterns required in everyday activities (Giblin et al., 2014a). Moreover, appropriately delivered PE, addressing these issues, leads to the enhancement of perceived and actual competence, thereby instilling the confidence necessary for kids to “have a go”. (MacNamara et al., 2015). In contrast to current practice, benchmarking complex movement patterns could enable provide information contributing to the individualisation of the PE experience, thereby placing the learner at the centre of the PE programme.

Summary of generally supported physical movement capacities is shown in Table 4.

Table 4: Summary of physical movement capacities

Simple movement capacities	Combined movement capacities	Complex movement capacities
Core stability	Poise (both balance and core stability)	Bilateral coordination
Balance	Fluency (coordination, balance and proprioception)	Inter-limb coordination
Coordination	Precision (accurate placement of the body and core stability)	Hand–eye coordination
Flexibility speed variation	Dexterity (coordination, accurate placement and flexibility)	Control of acceleration/deceleration
Control proprioception power	Equilibrium (balance, core stability and movement control)	Turning and twisting Rhythmic movement

Adapted by Giblin et al, 2014 a.

10.3 Pedagogical models: The great hope?

There is an undying culture of traditional PE practice and resistance to change in the UK.

The adoption of multiple pedagogical models is seen as the ‘great white hope’ for

curriculum form (Casey, 2014). Proponents of a models based approach suggest that, for PE to have impact, it must promote a range of learning outcomes. Namely: the physical, cognitive, social and affective which Kirk (2012) has stressed serves the main legitimate outcome of PE. Namely, the promotion of a physically active life after the school years. To promote teacher and pupil understanding of the holistic skills and attributes in PE the Significant Aspects of Learning, in the updated CfE,⁴ was designed to ensure quality PE through effective planning and the operational evaluation of a learner's progress.

Model based practice (MBP) is now recognized as an alternative to the traditional curriculum, which tends to focus on blocks of one particular sport with a traditional skill, drills and game approach. Whilst pedagogical models have been around since the 1980's they have not been adopted by many teachers (see Carse, 2015 for more details).

Longitudinal studies would be required as to empirically evaluate the efficacy of this approach. Nevertheless, the research that does exist suggests a positive impact for students, with less 'competent bystanders and more student autonomy' (Goodyear, 2016).

⁴ For further details see https://www.educationscotland.gov.uk/Images/HWBPEPaper0514_tcm4-827882.pdf

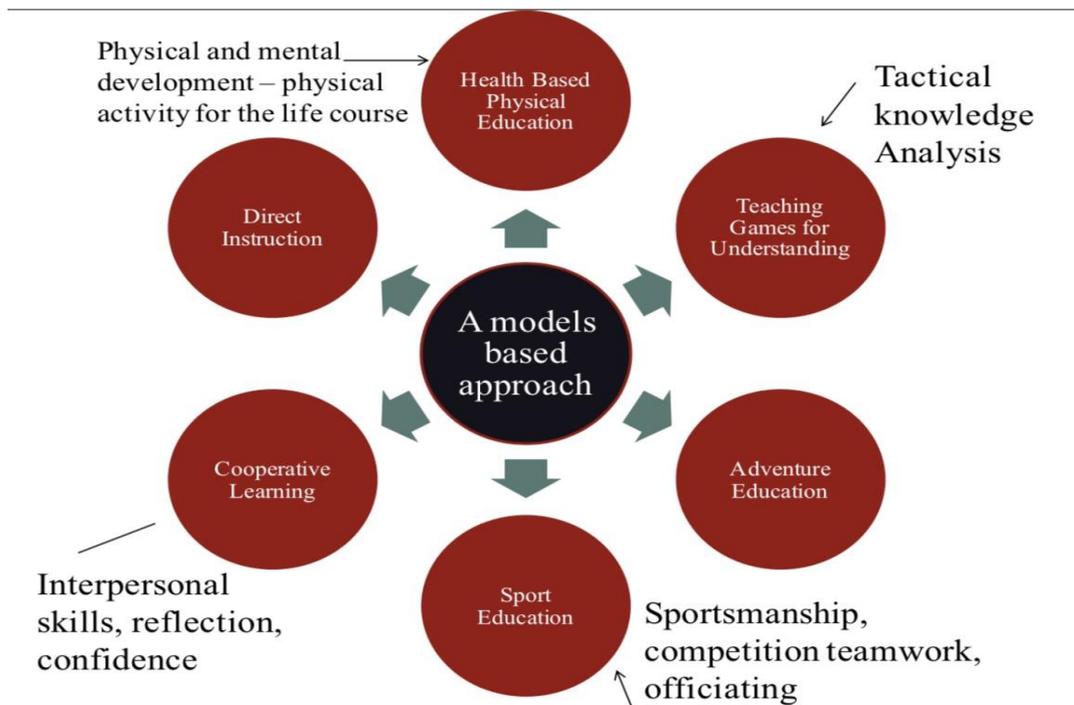


Figure 6: Summary of a models-based approach (practise) to teaching PE (Goodyear, 2016)

MBP involves organising the curriculum around learning outcomes, involving different approaches (Casey, 2014). This philosophy places the pupils at the centre of their own learning, thereby enabling the student to learn the subject matter in depth through their own enquiry, whilst solving problems and self-differentiating (Goodyear, 2016).

The concept of adjusting teaching methods according to situation was devised by Mosston in 1966 and was later refined and developed further by Mosston and Ashworth (2002). Subsequently, they developed a spectrum of teaching styles (Mosston, 1966; Mosston and Ashworth, 2002). This model was aimed at promoting the creativity of the teacher and focussed on the degree of interaction between student and teacher where at one end of their

spectrum are command led instructions, while at the other end is a student- centred approach with the teacher acting as a facilitator of learning.

Early believers in MBP focussed on a single model termed ‘sport education’. The concept of multi models was eventually devised to deliver the diverse range of learning required in PE (See Casey, 2014, for more details of the development of model based practise).

Amongst the variety of pedagogical models, the most commonly used are Sports Education (Siedentop, 1982) which focusses on friendly competition, small sided games and pupil/student autonomy, co-operative learning (Dyson, 2001; Biddle et al., 2005) which features small group interactions with a student centred approach, where students guide each other to solve problems,— see Dyson and Grineski, 2001; Dyson, 1995 for details on how to implement this approach— and teaching games for understanding (TGFU) which involves teaching games through simple small sided games with a progressive complexity see (Bunker and Thorpe, 1982).

There is further indication from the literature that attending to the illustrated learning outcomes, which may be addressed through MBP strongly influences the likelihood that students will engage in a physically active lifestyle through increasing the perception of ability (Giblin et al., 2014b; Fairclough et al., 2002; Goodyear, 2016). Additionally, enhancing the perception of ability is more likely to be conducive to additional PA in children. The primary reason that individuals drop out of PA, sport and exercise is due to a low level of competence, which can be perceived or actual (Gray et al., 2008; Kirk, 2013b).

This perception of poor competence negatively impacts intrinsic motivation, leading to a cycle of inactivity and low participation in activities within which individuals feel they lack competency (Kirk, 2013b; Ryan and Deci, 2000).

The extant literature has shown that perception of competence in PE is directly related to individuals enjoying the activity (Goudas and Biddle, 1994; Goudas et al., 1994; Hassandra et al., 2003). Goudas and Biddle (1994) reported that perception of competence accounted for 60% of the variation in internal motivation (Kirk, 2013b; Goudas and Biddle, 1994). Furthermore, the overemphasis of competitive sports by some PE teachers may be counterproductive to the pupils on which the teachers want to have an impact on (Sproule et al., 2011). Additionally, if the focus is on individual improvement, then regardless of their perceived competence there is an increase in enjoyment (Hassandra et al., 2003; Carlson, 1995; Dyson, 1995).

10.3.1 Low perception of competence

In chapter 7 (research focus 4), I discussed the impact of individuals who have a poor perception of competence and how this relates to self-determination theory. There I described how individuals with a low perception of competence are less likely to participate during PE or PA. Subsequently, potentially effecting their participation as they get older, particularly if there is no focus on self-improvement.

Interestingly, research focus 4 highlighted that there was a lack of positive feedback when individuals performed poorly at games. Indeed, some commented that they felt that their PE teacher had no time for them, thereby likely resulting in a cycle of poor perceived competence and lowered motivation. The promotion of positive feedback and the avoidance of demeaning evaluations have been shown to facilitate intrinsic motivation (Gray et al., 2008; Ryan and Deci, 2000).

As reflected in the data found in this thesis, an individual's competence based on past experiences and the judgment of others, effects their quality of engagement in PA (Kirk, 2013b). Participants in research focus 3 and 4 spoke about issues of bullying during PE, particularly if they were viewed as incompetent. These comments echo the qualitative element of Gray and Sproule's (2008) research where one individual commented "they just take the mick out of you". Although in this case it appears to be an isolated comment, it does appear from my data that this may be a fairly regular occurrence across schools. Additionally, the role of image and its link to body consciousness, poor self-image and obsession with weight control seem to be dominant amongst many females in the data in this thesis. It is clear from the data that young people are concerned about image and 'feeling large'. This perception, in turn, amplifies a negative self-awareness and contributes to a sense of intimidation within the PE environment. These findings concur with previous work by Biddle and colleagues (2005), who established that self-consciousness exerted a negative effect on girls PE participation (Biddle et al., 2005).

A definite cause of concern is the issue that certain activities in PE may lead to the perception of being intimidated or bullied, either by peers or PE teacher. In Chapter 8, research study 4, concerns over bullying by peers were highlighted during the participation of team games. An observation concurring with Chapter 7 (research study 3), where pupils from S1-S3 felt that team games and fitness testing created an opportunity for bullying. A concern expressed across genders. Subsequently, even when bullying is not perceived, it seems that a poor motivational climate, amongst individuals with an already low perception of competence, would not be conducive to participation in activities (Giblin et al., 2014a; Giblin et al., 2014b).

10.4 The need to challenge traditional beliefs

The literature highlights that resistance to a healthy lifestyle may be endemic within Scottish culture. In short we have become acculturated to unhealthy, stressful behaviours (O'Brien et al., 2009; Cowley et al., 2016). This phenomenon is not only evident within the health of the nation but seems to be engrained into the parochialist beliefs held in some in our schools. It is clear that to make an impact we need to challenge these traditional beliefs and values implicit within PE practice in both Secondary and Primary schools.

Undoubtedly there exist examples of great practice in Scotland. However, I have already suggested that the majority of PE lessons focus on isolated skills, developed through continuous drills, followed by a game (Jess et al., 2016; Carse, 2015; Thorburn et al., 2011; Kirk, 2013a; Kirk, 2013b). This focus only meets the needs of the 'gifted'. Conversely, when attempts are made in schools to suggest innovative alternatives, this is often met by

resistance. As illustration, Renshaw and colleagues (2015) cite the commonly expressed misconception that argues ‘how can they play a game if they don’t have good technique’? A belief which sets a child up for failure before they even try (Renshaw et al., 2015).

Previous work has identified that a games based curriculum focusing on a traditional teaching approach is unlikely to attract those who are most resistant to PE, especially young females, into an active lifestyle (Flintoff and Scraton, 2001; Mitchell et al., 2015).

Additionally, the findings in research studies 3 and 4 add to the evidence that many young people, particularly those resistant to PE participation, were not in favour of invasion games, or in competitive tasks such as fitness testing. This concurs with earlier work conducted as part of the Fit for Girls program where participants feared fitness testing, particularly the multi stage fitness test as they perceived themselves to lack competence in running (Mitchell et al., 2015). Additionally, Gray and Sproule’s (2008) mixed methods study into pupils’ perception of team games showed that S4 pupils felt that their teachers were biased towards certain activities, and that there was not enough consideration of their personal preferences. The input from these young people can be appreciated through qualitative research, and the opinions outlined in research study 4 should be taken as valuable data relating to the changing needs of the curriculum. Importantly, the human element of research input, such as the pupil voice, should not be overlooked.

10.5 Carry over value of PA: Curriculum content or method of delivery?

In order to promote the PE goal of preparing students for lifetime participation in PE, Physical Educators must recognize which activities have the greatest carry-over value into adult life (Fairclough et al., 2002). Murdoch and Whitehead (2012) emphasize that there has been too much focus on games in the PE curriculum with aesthetics, swimming and athletics lagging behind. Additionally, a case is put forward for a change on several fronts, where curriculum choice can give autonomy, as can a change in the methods of teaching what already exists (Bailey et al., 2009b; Kirk, 2002; Forsyth, 2014). Green (2000) warns that the addition of multi choices in PE is a contentious issue as some PE teachers use choice in the curriculum as a means of coping with older pupils, thereby promoting their continued participation in PE and PA (Green, 2000). Furthermore, Horrell et al., (2012) caution that this runs the risk of PE becoming ‘managed recreation’, which is void of any educational content excepting those who have already developed motor skills. However, in the Fit for Girls study which offered a broad range of alternative activities, Mitchell et al., (2012) reported that offering a choice of activity generally appeared to provide positive experiences for girls in their program. Accordingly, they concluded that a balance needs to be struck between autonomy and the facilitatory role of the teacher.

Additionally, the challenge exists to ensure that sufficient opportunities are presented so that pupils can increase skills across a full spectrum of activities. Interestingly, since the inception of this thesis, several studies have qualitatively explored pupils’ experiences of PE. Lewis (2017) highlighted that PE appeared to be the preferred class for pupils who were already competent at sport. Whilst those who perceived themselves to be less

competent felt that having autonomy and choice would improve their experience. Lewis concluded that to promote autonomy, and therefore intrinsic motivation, PE teachers need to advocate and provide a greater choice of activities. Furthermore, the study suggested that the previous work of Prusak and colleagues (2011), which advocated a health club model to engage adolescents in both PE and PA, suggested this may be more appropriate than the traditional approach to school PE (Prusak et al., 2011).

Evidently, a shift in the traditional PE curriculum is not simply a matter of adding alternative activities to the curriculum. As illustrated, the argument exists that it is not the actual activities that are the foundation of barriers to participation and skill development, but the way in which they are presented (Murdoch and Whitehead, 2012).

10.6 Solution for 16 to 18-year olds participation

There is growing evidence that an MBP approach to PE is potentially a more forward-thinking approach to developing and transforming the school PE experience. An initiative which may, logically, increase the probability of embedding a lifelong habit of PA.

However, it is my belief that, in line with the dialogue of Murdoch and Whitehead (2012), an optimised approach should not only look at teaching methods from an MBP perspective but should also apply a greater understanding of the curriculum elements required to ensure lifelong PA participation. Furthermore, care must be taken to ensure that by giving additional choice of activities to pupils that PE does not deteriorate into ‘managed recreation’. Instead, lessons should be physically educational, rather than just ensuring PA. Moreover, the most important factor in sustaining PA throughout life appears to be the

development of essential movement skills, subsequently facilitating the evolution of more complex movement patterns. Such a skills progression is most effectively fostered through a pupil centred approach, rather than the more conventional 'one size fits all' approach inherent within the curriculum (Giblin et al., 2014a; Giblin et al., 2014b).

Clearly, particularly in the younger years, there is a preference for team invasion games. While such activities should definitely continue in the curriculum, their presentation and delivery should be tailored in ways that foster intrinsic motivation (Gray et al., 2008). As illustrated, the use of MBP involving small sided team games which also contains activities that follow current exercise and sporting trends should not be discounted.

Although an argument also exists that PE teaching methods in the gym and classroom require review, there should be a balance between team games that tend to be predominantly played in youth, and games/ activities that may have a carry-over value into the remaining decades of life (Fairclough et al., 2002). It is evident that certain activities do track from childhood, all the way to adulthood. By way of example: sports-based and running-based activities, in youth, have been shown to positively correlate with adult PA levels, whilst no relationship is evident for dancing and fitness based activities and PA levels in adulthood (Bélanger et al., 2015). Further amalgamation of contemporary activities into the curriculum is an option, and it would seem sensible that innovative teaching approaches should embrace new technology.

With reference to core PE for those 16-18-year olds still at school, an argument exists for mandatory core PE across all ages, in all schools in Scotland. The health and wellbeing ethos of CfE could be upheld if PEPAS were made really attractive, in terms of both content and delivery, so that every young person wanted to participate in some form of sustainable activity (Wood, 2006). Rather than forcing adolescents to participate, they would want to engage in activities they enjoy.

The data in this thesis suggests that the use of current trends within fitness and health, may enhance PA participation in post-16 adolescents, whilst also increasing participation in those currently at school (senior phase of CFE). The integration of the health club model, comprising an educational component, into PE classes is one area which involves further investigation. For example, within the SQA catalogue of modules there exists awards rewarding participation in physical activities at a leisure based level. These contain significant educational content and remain an option for promoting PE and PA in older adolescents. Nevertheless, caution is merited as any implemented initiative and/or activity should have a progressive PE content aiming to address complex movement skills. Such MBP approaches would aim to develop and/or remediate fundamental movement competencies perceived as positively correlating with adult PA participation.

The promotion of a curriculum that focusses on developing perceived and actual competence through the early embedding of fundamental movement skills, together with an effective evaluator tool to ensure progress, may in turn promote future participation as adults (Giblin et al., 2014a; Giblin et al., 2014b; MacNamara et al., 2015). In line with the

recommendations of Cale and Harris (2013), “PE teachers need to understand, be sensitive to and address the challenges” therefore ensuring that every child matters.

In conclusion, physical educators should be encouraged to teach motor skills through the creation of environments within which mastery is encouraged through progressive exposure to gradually more challenging movement problems. Accordingly, encouraging gradually increasing movement mastery by customising challenges to that individual’s personal level of competence. The progressive achievement of manageable challenges may subsequently serve to enhance enjoyment, promote perceptions of competence and thereby encourage future engagement in PA.

10.7 Thesis strengths and limitations

10.7.1 Limitations of the thesis

This thesis was designed to capture opinions and perceptions of adolescents, within a specific geographical location, using a clearly defined purposive sample. However, conducting such research within practical working contexts, and with the resource limitations inherent within these environments, imposes several constraints.

Firstly, in research study 2, the use of a cross-sectional design only allows the capture of data at that particular point in time. A longitudinal design, to capture the transition period over several years would greatly add to the literature on this topic. Another limitation, particularly in research study 2, is the limited sample size. This can have implications for

the statistical tests employed. PA and stress measurement using questionnaires may also result in recall bias as participants may find it difficult to accurately retrospectively evaluate their activity patterns.

The focus groups studied involved a relatively small number of participants. As a result, the findings of these studies may not extrapolate nationally. However, the purposive sample captured for these studies typically reflected young populations from the targeted areas. Another major limitation was the absence of input of teacher based research, highly relevant to Chapter 7, research study 3. This was beyond the scope of the thesis and since the inception of the thesis has been piloted by another researcher (Lewis, 2014), and merits future investigation in a Scottish context.

The issue of the absence of a theoretical framework in research focus 4 is another factor that may be observed as a limitation. However, it was my intention to attempt to uncover findings inductively without a predetermined philosophy. Despite these limitations this thesis had several strengths:

10.7.2 Strengths of the thesis

Firstly, the two qualitative studies (research studies 3 and 4) involved the use of focus groups, serving to capture rich, ecologically valid data. Overall, this thesis has a good level of ecological validity. The included studies are generalisable in the real-life settings in which they were conducted.

Moreover, the use of focus groups enables the capture of richly detailed data, while allowing adolescents to articulate their beliefs, concerns and aspirations on health issues. The inductive, qualitative methodology helped to encourage pupil/participant voice which is a much-needed aspect of PEPAS research, in helping us to inform curriculum design. The barriers and facilitators to sustainable PA are best understood through the perspective of the participants, a factor which cannot be evaluated solely through quantitative research.

Lastly, this thesis has resulted in dissemination of its findings. These outputs have generated interest amongst practitioners, policy makers and the media. It has provided evidence enabling stakeholders to better understand the needs of participants, along with an account of how this research can be used to furnish local and national strategies for PE and health education/public health.

10.8 Final conclusions

This thesis aimed to investigate PEPAS participation and the adoption of health behaviours in Scottish adolescents, as framed against two established biopsychosocial phenomena: The Scottish effect, and the nested Glasgow effect. In chapters 4 and 5, I highlighted that cultural stressors play a role in PEPAS levels and overall health and wellbeing. It seems warranted that these deep rooted cultural attitudes and beliefs shape and influence the health of the nation.

These deep-rooted influences can be tackled on several dimensions, and as proponents of health and wellbeing and PE, PE teachers play a role in influencing these issues. In an educational capacity, PE staff can play a role in establishing a positive cultural shift towards promoting inclusive PE, whilst educating young people in the holistic aspects of health and wellbeing. An approach emphasising sustainable activity can promote lifelong PA habits. In short, PE must look beyond the traditional approach of simply delivering short-term PA, and instead should embrace a more holistic approach promoting positive physical, social and emotional health and wellbeing.

Whilst PE alone cannot solve the problems of the nation's health it is apparent that a positive PEPA and health and wellbeing experience can influence tomorrow's future adults to make correct choices. Furthermore, such an approach serves to build perceived competence, intrinsic motivation and facilitates the emergence of coping mechanisms necessary to counteract the stressors implicit in everyday life. To investigate the potential sustainability of such activities, I captured the thoughts, feelings and perceptions of young people. An approach leading to the following conclusions:

- Excessively accumulating life stress not only has a negative effect on health but simultaneously reduces PA uptake in vulnerable populations with PA levels significantly lower in those who had experienced a greater accumulated life stress.
- Activities where individuals may be singled out, such as fitness testing present barriers to participation.

- An overly competitive, performance based curriculum acts as a barrier for those perceived as non- sporty.
- Previous negative experiences within PE act as a barrier into adulthood.
- Some adolescents do not feel comfortable with and supported by their PE teacher.

Additionally, these findings have led to several conclusions and recommendations, summarised below:

- Curriculum and lessons need to promote autonomy, with an element of pupil voice in the curriculum.
- New technology may prove useful to encourage and maintain engagement, particularly in a co-operative learning model.
- Core PE sessions should embrace current fitness trends, but have an educational component.
- Games based lessons should be structured around pedagogical models promoting self-efficacy and intrinsic motivation.
- PE should be repackaged into an attractive compulsory brand for the senior phase of CfE.
- Physical Educators play a role in fostering positive cultural change. This would require additional training of a more holistic nature (for example: self-determination theory, alternative activities).

Earlier in this thesis, I discussed the importance of embedding lifelong PA habits in populations who are at particular risk from stress related impediments. This requires the fostering of a positive culture change embracing a holistic approach, of which physical educators should play a key role. The promotion of lifelong health and wellbeing requires a 21st century approach. Kirk (2013b) highlighted that today's PE was scarcely relevant for the last 30 years of the 20th Century and suggests an industrial age school ethos still exists. There remains a cultural 'hangover' where those perceived to be in the "cool sporty group" are seen as representative of PE. A positive shift in culture requires a major shift in ideology. The holistic approach of health and wellbeing is crucial to the way PE is perceived in the 21st century. Implementation of pedagogical models that embrace not only new technologies, but which embrace current fitness and exercise trends, while also incorporating pupil voice, appear to be useful strategies which may promote lifelong activity and health and wellbeing.

10.8.1 Novel aspects of the thesis

This thesis is novel in several ways. Firstly, I presented the biopsychosocial nature of the negative health consequences associated with the Scottish effect, and the encapsulated Glasgow effect. of the relevance of accumulative stress in this cultural context has not been fully explored previously. Secondly, given the therapeutic and preventative benefits of PA in offsetting the negative consequences of poor health habits, I presented data adding to the existing evidence suggesting excessively accumulating life stress, not only influences health, but simultaneously reduces PA uptake in vulnerable populations. Thereby subsequently highlighting the negative relationship between excess life stress and PA.

These findings support proposals that conventional PE practice should be re-framed to, not only provide PA during school years, but to promote lifelong interest in PA. Lastly, using pupil voice, investigative, qualitative methods were applied to help uncover perceived barriers and facilitators to PEPAS in both the CfE phases of broad general education, and those aged in the post 16 senior phase of CfE. Few studies have qualitatively investigated the reasons for PA/sport decline in 16-18-year old's and the associated barriers and facilitators.

CHAPTER 11 - PERSONAL REFLECTIONS ON THE PROFESSIONAL DOCTORATE

11.1 Introduction

This final chapter serves as a portfolio of evidence detailing how my professional doctorate outputs have, thus far, impacted both my personal practice and my professional domain. In Chapter 1 of this thesis I conveyed my professional rationale for choosing this thesis topic and also noted my personal motivations. I felt that, as a reflective practitioner that this served to place my choice of thesis topic in perspective, and contextualised both the academic and professional deficits that I hoped to address. As previously noted, the questions arising in this thesis were originally born out of a blend of personal curiosity and experiences within my professional domain. Initially as a further education lecturer, and subsequently as a PE teacher.

In Chapter 1, I explained the various circumstances leading to my personal and professional interest in the PE and health related considerations impacting Scottish adolescents. My original thought was that if we could gain a better understanding of PE related factors, either promoting or inhibiting long-term PA sustainability, then we could use such insights to drive reform in conventional methods of PE delivery. Exploration of these questions required that I first examined a series of nested sub-questions, specifically: does excessive biopsychosocial stress impact PA? Is there a link between self-perceived stress and pa levels in Scottish adolescents? What are young people's perceptions of PEPAS and its

relationship to health? And how does school based PE impact of the barriers and facilitators to PA once they leave school?

Although the conclusions of this thesis are founded on the empirical findings of the conducted studies, there are also some personal observations, opinions and anecdotal evidence that are relevant to my domain. As such, I feel that including some personal reflection is worthwhile. Furthermore, as a part of the professional update process required by the GTCS for Scottish teachers, reflective critical data is currently considered a form of shared practice and, as such, some personal reflection seems appropriate.

11.2 How does this work extend current theory and professional practice?

The outcome criteria for the Professional Doctorate award is the advancement of current theory and practice. This thesis highlights the potential remediating role of PEPAS on the risk factors underpinning the perennial problems associated with the health of the Scottish nation and, more narrowly, the Glasgow population., whilst also focussing on the transition stages around the post 16 age group.

The data collected in this thesis related to my practice in several ways. In a professional context, this has enabled me to add to my professional domain by clarifying the curriculum changes necessary to enhance delivery of my subject, taught on both a personal level and on a national macro level. For example, it is critical that the teacher, in practice, continually emphasises the ‘carry over’ or ‘transference’ of school-time activities into life beyond compulsory education. Similarly, it appears beneficial that PE teachers strive to create

practices that enhance pupils' long-term adherence to PA activities. This is especially important given that the development of physical literacy and activity habits created at a young age support habits in later life (Kirk.2005). To date, this is an area which has received very little consideration, particularly within the 16-18-year-old age bracket.

11.2.1 Primary school PE observations

During the period of working on my professional Doctorate, I began teaching PE in primary schools. Personal observations here confirmed what some of the literature stated. Specifically, that there is a distinct bias solely in “getting them active” or, as previously noted, there is an overemphasis on “the here and now” of PA (Kirk, 2013). Importantly, available evidence clearly suggests that this is the most critical phase for establishing physical literacy. Physical literacy in turn is a critical factor in determining perceived movement competence in a wide range of PA situations.

Whilst I am aware of the importance that class teachers put on healthy living and wellbeing, it appears evident that in a primary school context, many class teachers are not fully aware of the concept of physical literacy. Furthermore, PE delivered by a specialist PE teacher is perceived by many non-PE teachers as time out from their class (known as their McCrone time). On several occasions, I had tried to meet with class teachers to share aspects of learning covered with their class, only to be met with the phrase “oh well, they are hot and breathing hard, so you have done your job”.

Previously in this thesis it was stated that to many teachers, PE is an outdated form of sport-specific technical training, typically taught in blocks of activities. My personal observations suggest that this perception remains very common, particularly in the primary sector. Additionally, on many occasions, I observed PE being ‘taught’ by young coaches from local colleges, despite their lack of appropriate training.

The importance of laying the foundations for movement at the primary stage impelled me to change the way I taught PE, and I began moving away from traditional blocks of activities and towards more contemporary pedagogical models. For example, I implemented the use of the co-operative learning model, whilst teaching athletics with a Primary 7 class. This class historically had a high number of unwilling participants and competent bystanders. Subsequently I designed a series of contemporary lessons which endeavoured to include a more cooperative learning approach, rather than traditional cross-country lessons. Accordingly, I used a recreational park away from the school environment and marked out a time trial course. The children were allocated to groups following the guidelines outlined by Casey (2016). Within each group we had timers, coaches filming the participants and noting the times and observing technique. By the end of the series of co-operative athletics lessons, all the children, not just the high performers, were willing to run and have a go.

My observation was that pupils who had been previously unwilling to participate in running during PE, increased their willingness to participate. This, when contextualised against the literature, is presumably a consequence of being afforded greater autonomy, relatedness

and feeling more competent. Furthermore, the pupils felt they were not being judged in large groups, in front of the whole class. Subsequently, I also implemented this format for an S1-S2 group in secondary schools. Here I observed less resistance to activity, with the pupils reporting that it was more fun and that they felt they were learning more.

11.2.2 Observations in older adolescents

Another group going through a transition phase are those approaching (or already in) the non- compulsory stage of PE, as featured in Chapter 7. The data in this thesis highlights that the implementation of activities that offer avenues of continued participation into adulthood, post school, should be offered as choices in PE. Such as, those reflecting current fitness trends. Some cited Metafit or Insanity, both brands of high intensity interval training, whilst others stated that they liked activities such as Zumba and boxercise.

However, as previously noted it is important to ensure that there is learning content in PE, so it is not merely a 'managed recreation approach'. I was keen to try out strategies that arose from the data in this thesis. Consequently, by implementing fitness style classes to those who want to participate in them, I have observed increased enthusiasm and participation in 16-18year olds. Accordingly, by incorporating current trends and adding progression and regression for all exercises, whilst embedding elements of bilateral movement and functional movements, I feel such initiatives have enabled me to physically educate, whilst also improve habitual PA levels. Additionally, using inclusive small sided games, where the older adolescents were involved in a modified version of the Sport education model, also appears to have greatly increased participation levels in my classes.

11.3 Portfolio of dissemination

I have sought to disseminate the key findings, emerging from this doctoral work, via several platforms, namely:

- Peer reviewed publications
- Conference presentations
- Amended professional practice within my school and cluster group
- Publicity within the mainstream media

The peer review process was the most important part of disseminating findings as far as this Doctorate is concerned. After discussion with my supervisory team, I had decided to take a longer route to completing my thesis by presenting each study for peer review. This decision required that I first conduct a conceptual review, to more deeply explore the range of topics underpinning the main thesis focus. Although the journey was, at times, difficult this proved to be an excellent method for gaining feedback, whilst helping hone my academic writing style and building my research profile.

Initially, I presented and published an article in a journal specifically for Scottish Association of teachers in PE (SATPE), entitled 'Exploring the 'Post 16 gap' in Physical Activity'. My next step was to become involved in a local PE networking group, within which incidentally, there was only one primary specialist using a model based approach.

To further challenge myself to more clearly disseminate the thesis outputs, I presented several of my research foci at academic conferences, both nationally and internationally. This proved an excellent method of networking, promoting my research findings and gaining experience of the research process in general. Additionally, my work generated interest from several Scottish government policymakers who attended one of the conferences and were interested in the fact that PE levels for S5-S6 were now not measured.

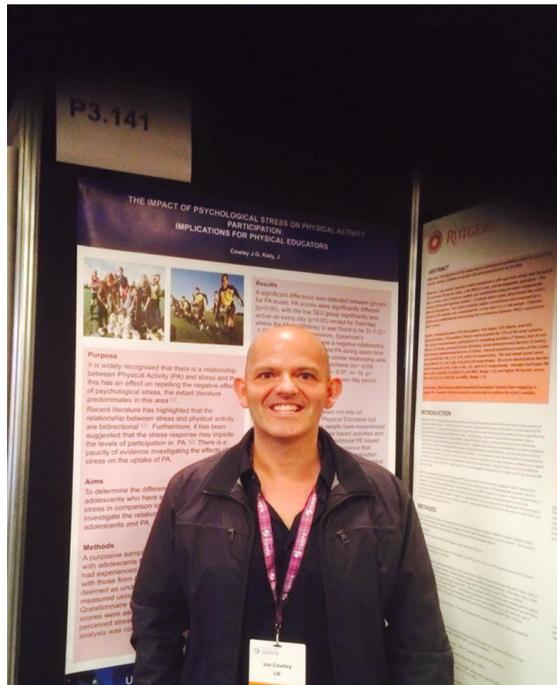


Figure 7: Presenting at ISBNPA: The impact of Psychological stress on PA participation: Implications for Physical Educators. Poster presentation at ISBNPA

https://www.isbnpa.org/files/annual_meetings/2015/06/10/16/attachments/557869344c5e6.pdf

Table 5: Dissemination of research from this thesis

Academic publications from this thesis:

- Cowley, Joseph, Kiely, John and Collins, David J (2017). What makes young people tick? A qualitative analysis of the beliefs and perceptions of school aged children towards PE and healthy living in 'the sickest area of Europe'. *International Journal of Adolescent Medicine and Health*. ISSN 0334-0139 <https://www.researchgate.net/publication/317001370> What makes young people tick A qualitative analysis of the beliefs and perceptions of school aged children towards PE and healthy living in the sickest area of Europe
- Cowley, J.G, Kiely, J and Collins, D J (2016). Is there a link between self-perceived stress and physical activity levels in Scottish adolescents? *International Journal of Adolescent Medicine and Health*. ISSN 0334-0139 <http://clock.uclan.ac.uk/18009>
- Cowley, J.G., Kiely, J and Collins, D. (2016). Unravelling the Glasgow effect: The relationship between accumulative biopsychosocial stress, stress reactivity and Scotland's health problems. *Preventive medicine reports*. <https://www.ncbi.nlm.nih.gov/pubmed/27512652#>
- Cowley, J.G. (2014) Exploring the 'Post 16 gap' in Physical Activity. *Scottish Association of Teachers of Physical Education Journal*. (SATPE) Volume 1 (5).

Peer reviewed conference presentations:

- SPARC. Physical Activity for Health Research Centre (PAHRC), University of Edinburgh and Active Scotland Division, Scottish Government 26th October (2016). Exploring the post 16 gap: Implications for physical educators
- International Society of Behavioural Nutrition and Physical Activity (ISBNPA) 2015 Conference. Edinburgh. Wednesday 3rd June (2015) The impact of Psychological stress on Physical Activity participation: Implications for Physical Educators. Peer reviewed poster. Available at <http://www.eposters.net/pdfs/the-impact-of-psychological-stress-on-physical-activity-participation-implications-for-physical.pdf>
- BASES Conference. UCLAN, Preston. Tuesday 3rd September (2013) A qualitative investigation into the Post 16 gap of physical activity. Peer reviewed oral flash presentation

11.3.1 Media coverage

Unexpectedly, at least by me, the conclusions of my first and second publications generated some public and media interest, resulting in some press coverage. Interestingly, the media interpretation of the journal article correctly focused primarily on the positive role of PA in remediating some of the damage inherent in stressful lifestyles. Subsequent to this article, the Daily Mail followed up by addressing related questions to the Scottish Health Minister.

1. Press coverage

The article ““Storm of stress” behind Scots shocking health” appeared in the in the Daily mail on the 3rd of October 2016:

<https://www.pressreader.com/uk/scottish-dailymail/20161003/281672549439752>

[see Figure 8].

2. Radio coverage 1

After this media coverage, I was contacted by Radio Scotland to give an interview on their drivetime programme. The key take homes from this interview were that PA and stress were bi-directional, and that there is an identified need to promote physical literacy and fundamental movement skills in school PE. This conclusion created great interest in my workplace, and resulted in colleagues becoming more interested in my doctoral studies.

3. Radio coverage 2

Following up from this initial interview I have been once more contacted by Radio Scotland to comment on the implications of this research to recent Scottish Government findings on PA. This is in light of recent media coverage relating to

PA levels of Scottish youngsters reported since the inception of this thesis.

During this communication, I emphasised the importance of laying the foundations of physical literacy during PE, rather than focussing solely on PA levels.

4. Cluster group and peer dissemination

In my own practice, I have addressed the issue of moving towards a model based approach to the PE curriculum. I have shared these ideas and experiences with colleagues via PE cluster group workshops. However, as evident within the workshops, there remains an apparent cultural resistance to such changes and an evident bias towards a multi-activity approach to PE. In the future, I hope to use the platform provided by my doctoral thesis to continue to suggest the need for positive change.

Interestingly, the findings of chapter 4 (research study 1) are in extensive use in one Scottish University as part of the curriculum involving health in Scotland and its relationship with PEPAS.

'Storm of stress' behind Scots' shocking health



Scottish Daily Mail 3 Oct 2016 By Mark Howarth

THE nation's health record has long been anything but enviable – but now it seems Scots are also the most stressed people in Britain.

Scotland has struggled for decades to shake off its reputation as the 'sick man of Europe' with its higher rates of heart disease, cancer and obesity.

Now academics believe one factor could be daily life north of the Border presenting a 'storm of stressors' – with Glasgow bearing the brunt of its force.

The study by Central Lancashire University, published in the journal Preventive Medicine Reports, says: 'There remain characteristics of life in Scotland, and specifically in Glasgow, which further add to the health-reducing toll of accumulative stress.'

'Recent studies have noted a "macho" approach to health behaviours in Scottish men.

Many consider good health behaviours as feminine; whilst negative health behaviours, such as binge drinking are perceived as manly. Other stress-inducing factors [may include] the physical and the climatic environment.'

The authors suggest that encouraging Scots to do more exercise could break the cycle.

Health psychologist Dr Cynthia McVey, of Glasgow Caledonian University, said: 'In Scotland, and Glasgow particularly, the end of heavy industry created enormous despondency that touched several generations.'

'Many youngsters – now grown up – learnt at their parent's knee that cigarettes, alcohol, watching television and eating junk food is a way of coping with stress. And our weather does not help; even dogs often refuse to go out in it. It promotes a lack of physical activity and deficiency in vitamin D which we get from sunlight. We also eat far too much sugar.'

Public health minister Aileen Campbell said: 'Scotland has tackled its health problems in innovative ways, including introducing the UK's first public spaces smoking ban, legislation to reduce

harmful drinking through minimum unit pricing and an ambitious physical activity programme to create a lasting legacy from the Commonwealth Games.'



Figure 8: Daily Mail article

11.4 Future considerations and personal directions

Having now completed the thesis, upon reflection, there are many avenues I would like to explore post-Doctorate. A replication of the study in Chapter 5, using a greater sample size, would be of great interest. Similarly, the use of accelerometers to measure PA, and the inclusion of measures of perceived competence, are both innovations worthy of future exploration. Additionally, the development of more research to inform curriculum strategy, amongst older adolescents, with an emphasis on their preferred curriculum content, is of personal interest. Whilst this topic is already being explored by others, value could potentially be added by the inclusion of novel strategies involving a democratic form of compulsory health and wellbeing in S5-S6.

Lastly, if the teaching is not right, it is difficult to give every child a positive PE experience. I feel that the use of traditional methods requires re-evaluation, with more research comparing MBP with traditional teaching across sector. In short, we need to move away from teaching for the attainment of sporting prowess. We need hard evidence to guide our future evolution, which in turn requires a nationwide evaluation of PE teaching methods, both in Primary and Secondary schools, to evaluate the frequency of use of pedagogical models.

11.5 Conclusion of this Chapter

This chapter provide a personal reflection on the potential impact of this thesis on my professional domain. Throughout this journey I have become more passionate about my personal PE practice. I have realised that there are weaknesses in the curriculum and personally feel that PE is still perceived as a tag along subject to get children active in the short term. Anecdotally, I would say that within schools many non-PE teachers see it as the pupils' 'time out from academic study, to get them hot and sweaty' and 'kicking a ball around' or even worse, just 'for the sporty kids'. I sincerely feel that at this stage, the inclusion of PE into the health and wellbeing framework will add more credibility to my subject.

In Scotland, we have excellent teachers with great academic credentials, but we need to convey this properly at a professional level. Furthermore, teaching PE needs to rely less on tradition and move towards more evidence-led guidelines for practice. Guidelines capable of promoting lifelong PA, and holistic health and wellbeing so that we truly are getting it right for every child.

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Appendix 1: Physical Activity Questionnaire

Physical Activity Questionnaire (High School)

Name: _____ Age: _____
 Sex: M _____ F _____ Grade: _____
 Teacher: _____

We are trying to find out about your level of physical activity from *the last 7 days* (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

Remember:

- 3. There are no right and wrong answers — this is not a test.
- 4. Please answer all the questions as honestly and accurately as you can — this is very important.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

	No	1-2	3-4	5-6	7 times or more
Skipping	<input type="radio"/>				
Rowing/canoeing	<input type="radio"/>				
In-line skating	<input type="radio"/>				
Tag	<input type="radio"/>				
Walking for exercise	<input type="radio"/>				
Bicycling	<input type="radio"/>				
Jogging or running	<input type="radio"/>				
Aerobics	<input type="radio"/>				
Swimming	<input type="radio"/>				
Baseball, softball	<input type="radio"/>				
Dance	<input type="radio"/>				
Football	<input type="radio"/>				
Badminton	<input type="radio"/>				
Skateboarding	<input type="radio"/>				
Soccer	<input type="radio"/>				
Street hockey	<input type="radio"/>				
Volleyball	<input type="radio"/>				
Floor hockey	<input type="radio"/>				
Basketball	<input type="radio"/>				
Ice skating	<input type="radio"/>				
Cross-country skiing	<input type="radio"/>				
Ice hockey/ringette	<input type="radio"/>				
Other:	<input type="radio"/>				
.....	<input type="radio"/>				
.....	<input type="radio"/>				

Appendix 1: Physical Activity Questionnaire (cont.)

2 of 4

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

- I don't do PE
- Hardly ever
- Sometimes
- Quite often
- Always

3. In the last 7 days, what did you normally do *at lunch* (besides eating lunch)? (Check one only.)

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

4. In the last 7 days, on how many days *right after school*, did you do sports, dance, or play games in which you were very active? (Check one only.)

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

5. In the last 7 days, on how many *evenings* did you do sports, dance, or play games in which you were very active? (Check one only.)

- None
- 1 time last week
- 2 or 3 times last week
- 4 or 5 last week
- 6 or 7 times last week

6. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

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

Appendix 1: Physical Activity Questionnaire (cont.)

3 of 4

7. Which *one* of the following describes you best for the last 7 days? Read *all five* statements before deciding on the *one* answer that describes you.

- F. All or most of my free time was spent doing things that involve little physical effort
- G. I sometimes (1 — 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics)
- H. I often (3 — 4 times last week) did physical things in my free time
- I. I quite often (5 — 6 times last week) did physical things in my free time
- J. I very often (7 or more times last week) did physical things in my free time

8. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

	None	Little bit	Medium	Often	Very often
Monday	<input type="radio"/>				
Tuesday	<input type="radio"/>				
Wednesday	<input type="radio"/>				
Thursday	<input type="radio"/>				
Friday	<input type="radio"/>				
Saturday	<input type="radio"/>				
Sunday	<input type="radio"/>				

9. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

- Yes
- No

If Yes, what prevented you? _____

Appendix 1: Physical Activity Questionnaire (cont.)

Reference:

The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A)

Kowalski, K., Crocker, P., & Donen, R. The Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) Manual. College of Kinesiology, University of Saskatchewan.

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Appendix 2: Perceived stress scale

PERCEIVED STRESS SCALE

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Name _____ Date _____

Age _____ Gender (Circle): **M** **F** Other _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

- | | | | | | |
|--|---|---|---|---|---|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly? | 0 | 1 | 2 | 3 | 4 |
| 2. In the last month, how often have you felt that you were unable to control the important things in your life? | 0 | 1 | 2 | 3 | 4 |
| 3. In the last month, how often have you felt nervous and "stressed"? | 0 | 1 | 2 | 3 | 4 |
| 4. In the last month, how often have you felt confident about your ability to handle your personal problems? | 0 | 1 | 2 | 3 | 4 |
| 5. In the last month, how often have you felt that things were going your way? | 0 | 1 | 2 | 3 | 4 |
| 6. In the last month, how often have you found that you could not cope with all the things that you had to do? | 0 | 1 | 2 | 3 | 4 |
| 7. In the last month, how often have you been able to control irritations in your life? | 0 | 1 | 2 | 3 | 4 |
| 8. In the last month, how often have you felt that you were on top of things? | 0 | 1 | 2 | 3 | 4 |
| 9. In the last month, how often have you been angered because of things that were outside of your control? | 0 | 1 | 2 | 3 | 4 |
| 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? | 0 | 1 | 2 | 3 | 4 |



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References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.

Appendix 3: For research study 3 and 4

The thematic analysis process that was used to analyse the transcripts

Adapted from Braun and Clarke^{ref}

1. Data familiarisation- Read and re- read the data. Note down general ideas
2. Generate initial codes using a highlighter in the margin of the transcript.
Ensure that each piece of data is assigned to the relevant code.
3. Search for themes-Look for a pattern that emerges from the codes.
Collate these codes together into relevant themes.
4. Review the themes and codes grouped together
5. Define and name the themes. What does each theme mean? Use an appropriate name for each theme.
6. Write report-Choose relevant detailed extracts. How does this relate to the literature and research aims?

Appendix 3: Topic guide for research study 3

Focus group topic guide-Research study 3
1. Tell me what healthy living means to you?
2. What sort of health issues do think are important to young people like yourself?
3. What sort of things do young people do, that are healthy?
4. What sort of things do young people do, that are unhealthy?
5. What do you understand about PE and health and wellbeing?
6. Do you think that something like Facebook/Mobile phones/Computer gaming could be used to help improve young people's health, even in class?
7. If you wanted some health advice who would you like to go to? <ul style="list-style-type: none">- Person similar to yourself in age- Teachers- Parents- Health professionals- other/family

Appendix 4: Topic guide for research study 4

Focus group topic guide-Research study 4

What do you understand by the terms physical activity, sport and exercise?

What are your current experiences of physical activity?

What do you think of the physical education you received at school?

What sort of thing would prevent you from participating in activities when at school?

How would you improve PE and physical activity?

Would you say you are more or less active since leaving school?

What sort of things prevents you from participating in activities now?

To what extent is physical activity part of young people's leisure time?

What role do your friends and family play in determining your activities?

What would make you more active?

Appendix 5: Description of participants - research study 3

Respondent	Age	Sex	School year
1	13	M	S2
2	13	M	S2
3	13	M	S2
4	13	M	S2
5	13	F	S2
6	13	F	S2
7	12	F	S2
8	13	F	S2
9	12	M	S1
10	12	M	S1
11	12	M	S1
12	12	M	S1
13	13	F	S2
14	13	F	S2
15	12	M	S2
16	12	M	S1
17	12	F	S1
18	13	F	S2
19	12	F	S2
20	13	M	S2
21	13	M	S2
22	13	M	S2
23	13	M	S2
24	12	M	S1
25	12	F	21
26	12	F	S1
27	12	M	S1
28	13	M	S2
29	13	M	S2
30	13	F	S2
31	13	M	S2
32	12	F	S1
33	13	F	S2
34	12	F	S1
35	12	F	S1
36	12	M	S1
37	13	F	S2
38	13	M	S2
39	13	M	S2

Appendix 5: Participants Characteristics (Cont.)

This guide corresponds to the original transcripts and allows the reader an understanding of what school the participant comes from and in what focus group (FG) each respondent participated in.

School 1	School 2	School 3
1-4 FG4	16-19 FG 5	24-27 FG7
5-8 FG1	20-23 FG 6	28-31 FG8
9-12 FG2		32-35 FG 9
13-15 FG3		35-39 FG 10