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**Men's experiences of receiving objective feedback
on physical activity and other indicators of health
risk, within the context of a gender-sensitised
weight loss intervention**

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**Thesis submitted for the degree of Doctor of
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Abstract

Receiving personalised feedback on body mass index and other health risk indicators may prompt behaviour change. Few studies have investigated men's reactions to receiving objective feedback on such measures and detailed information on physical activity and sedentary time. The aim of my research was to understand the *meanings* different forms of objective feedback have for overweight/obese men, and to explore whether these varied between groups. Participants took part in Football Fans in Training, a gender-sensitised, weight loss programme delivered via Scottish Professional Football Clubs. Semi-structured interviews were conducted with 28 men, purposively sampled from four clubs to investigate the experiences of men who achieved and did not achieve their 5% weight loss target. Data were analysed using the principles of thematic analysis and interpreted through Self-Determination Theory and sociological understandings of masculinity. Several factors were vital in supporting a 'motivational climate' in which men could feel 'at ease' and adopt self-regulation strategies: the 'place' was described as motivating, whereas the 'people' (other men 'like them'; fieldwork staff; community coaches) provided supportive and facilitative roles. Men who achieved greater weight loss were more likely to describe being motivated as a consequence of receiving information on their objective health risk indicators. They continued using self-monitoring technologies after the programme as it was enjoyable; or they had redefined themselves by integrating new-found activities into their lives and no longer relied on external technologies/feedback. They were more likely to see post-programme feedback as confirmation of success, so long as they could fully interpret the information. Men who did not achieve their 5% weight loss reported no longer being motivated to continue their activity levels or self-monitor them with a pedometer. Social support within the programme appeared more important. These men were also less positive about objective post-programme feedback which confirmed their lack of success and had less utility as a motivational tool. Providing different forms of objective feedback to men within an environment that has intrinsic value (e.g. football club setting) and congruent with common cultural constructions of masculinity, appears more conducive to health behaviour change.

Table of contents

ABSTRACT	2
TABLE OF CONTENTS.....	3
LIST OF TABLES AND FIGURES	8
ACKNOWLEDGEMENTS.....	9
AUTHOR'S DECLARATION	10
1 CHAPTER ONE: INTRODUCTION	11
1.1 RESEARCH CONTEXT	14
1.2 AIMS AND OBJECTIVES AND RESEARCH QUESTIONS	19
1.3 THESIS STRUCTURE	20
2 CHAPTER TWO: LITERATURE REVIEW	21
2.1 INTRODUCTION.....	21
2.2 OBESITY AND HEALTH	21
2.3 PHYSICAL ACTIVITY AND HEALTH	24
2.4 SEDENTARY BEHAVIOR	27
2.5 WALKING AND HEALTH BENEFITS	29
2.5.1 Physical activity and weight management	30
2.6 FEEDBACK AND BEHAVIOUR CHANGE.....	32
2.6.1 Personalised objective feedback on indicators of health risk.....	34
2.6.2 Pedometer feedback as a motivational tool for increasing physical activity	35
2.7 THEORETICAL UNDERSTANDINGS OF BEHAVIOUR CHANGE	36
2.7.1 Traditional social-cognitive approaches to behaviour change	37
2.7.2 Identifying active behaviour change 'ingredients'	39
2.7.3 The role of life events in behaviour change and weight loss	41
2.8 SELF-DETERMINATION THEORY, MOTIVATION AND WELLBEING.....	43
2.8.1 Organismic dialectical meta-theory.....	45
2.8.2 Cognitive Evaluation Theory	46
2.8.3 Organismic Integration Theory.....	49
2.8.4 Amotivation.....	55
2.8.5 Basic Psychological Needs Theory	55
2.8.6 Goal Contents Theory	60

2.8.7	Causality Orientations Theory.....	62
2.9	MASCULINITY AND HEALTH BEHAVIOUR	63
2.9.1	Social construction of gender	64
2.9.2	Relational theories of masculinity and men's health behaviour	64
2.9.3	Performances of masculinity in relation to weight loss	66
2.9.4	Masculinity and body image	67
2.9.5	Masculine 'capital' and health behaviours	68
2.10	SUMMARY	69
3	CHAPTER THREE: METHODS	72
3.1	INTRODUCTION.....	72
3.2	SETTING AND CONTEXT	72
3.3	RATIONALE FOR UTILISING QUALITATIVE METHODS	73
3.4	RESEARCH METHODS.....	76
3.4.1	The research context: identifying participants.....	76
3.4.2	Objective physical measurements.....	78
3.4.3	Research procedures	80
3.4.4	Sampling and recruitment for the qualitative interviews.....	84
3.4.5	Characteristics of the sample	85
3.5	DATA GENERATION.....	90
3.5.1	Rationale for semi-structured telephone interviews	90
3.5.2	Conducting the interviews.....	91
3.6	DATA MANAGEMENT AND ANALYSIS	92
3.6.1	Transcription and data storage	92
3.6.2	Data analysis.....	92
3.6.3	Reflexivity and my position as a researcher	96
3.6.4	Ethics	98
3.7	SUMMARY	99
4	CHAPTER FOUR: 'THE BMI HIT A LOT OF PEOPLE ON THE COURSE BECAUSE IT'S NO' SOMETHING YOU GET DONE ALL THE TIME': MEN'S REACTIONS TO RECEIVING OBJECTIVE FEEDBACK ON THEIR HEALTH RISK INDICATORS	100
4.1	INTRODUCTION.....	100
4.2	MEN'S ANTICIPATION OF BEING MEASURED PRIOR TO TAKING PART IN FFIIT	100
4.3	MEN'S EXPERIENCES OF BEING MEASURED AT THE BASELINE OBJECTIVE PHYSICAL MEASUREMENTS	103

4.3.1	The setting and the people	105
4.4	MEN'S EXPERIENCES OF RECEIVING INFORMATION ON THEIR OBJECTIVELY MEASURED INDICATORS OF HEALTH RISK	113
4.5	IMPACT OF RECEIVING INFORMATION ON OBJECTIVELY MEASURED INDICATORS OF HEALTH RISK	121
4.5.1	Confirmation of expectations	121
4.5.2	Motivation for action	123
4.6	SUMMARY	126
	128
5	CHAPTER FIVE: 'IT'S LIKE A PERSONAL MOTIVATOR THAT YOU CARRIED AROUND WI' YOU': MEN'S EXPERIENCES OF WEARING THE PEDOMETER TO QUANTIFY AND INCREASE THEIR PHYSICAL ACTIVITY LEVELS	134
5.1	INTRODUCTION.....	134
5.2	MEN'S PERCEPTIONS OF WALKING AS A VALUED AND ACCESSIBLE FORM OF PHYSICAL ACTIVITY	134
5.3	MEN'S GENERAL PERCEPTIONS OF WEARING THE PEDOMETER	136
5.4	THE PEDOMETER AS AN INSTRUMENT FOR OBJECTIVE FEEDBACK AND SELF-MONITORING DURING THE 12 WEEK PROGRAMME	142
5.5	THE SETTING AS A SOURCE OF MOTIVATION FOR USING THE PEDOMETER TO INCREASE ACTIVITY LEVELS DURING THE 12 WEEK PROGRAMME.....	153
5.6	THE INFLUENCE OF OTHER PEOPLE AS A SOURCE OF MOTIVATION FOR USING THE PEDOMETER DURING THE 12-WEEK PROGRAMME.....	155
5.7	ROLE OF THE PEDOMETER IN MEN'S LIVES AFTER THE 12-WEEK PROGRAMME	158
5.7.1	Continuing self-monitoring technologies to support PA	158
5.7.2	Men who did not continue to use the pedometer	165
5.8	EXPERIENCES OF WEARING THE PEDOMETER TO SELF-MONITOR PA: DIFFERENCES BETWEEN THE ACCOUNTS OF THOSE WHO ACHIEVED AND DID NOT ACHIEVE THEIR 5% WEIGHT LOSS TARGET AT 12 WEEKS	172
5.9	SUMMARY	173
6	CHAPTER SIX: 'IT WAS LIKE OPENING UP YOUR EXAM RESULTS AND SAYING, "HEY, I DID ALRIGHT HERE'": MEN'S ACCOUNTS OF RECEIVING PERSONALISED FEEDBACK ON THEIR OBJECTIVELY MEASURED ACTIVITY PATTERNS	178
6.1	INTRODUCTION.....	178

6.2	MEN'S EXPERIENCES OF WEARING THE ACTIVPAL3™ TO OBJECTIVELY MEASURE THEIR ACTIVITY LEVELS	179
6.3	MEN'S EXPECTATIONS ABOUT THEIR POST-PROGRAMME FEEDBACK, PRIOR TO RECEIVING THEIR FEEDBACK LETTER	187
6.3.1	Positive expectations.....	187
6.3.2	Neutral expectations	188
6.3.3	Negative expectations	189
6.4	UNDERSTANDINGS AND MEANINGS OF THE POST-PROGRAMME FEEDBACK	190
6.4.1	Transformative	193
6.4.2	Celebratory	194
6.4.3	Confirmatory	195
6.4.4	Disappointing	196
6.5	UTILISATION OF THE POST-PROGRAMME FEEDBACK LETTER	198
6.5.1	The feedback as a tool for self-reflection	198
6.5.2	The feedback as a tool for behavioural modification	201
6.5.3	Durable evidence of the men's ability to change	205
6.5.4	Motivational prompts to maintain internal commitments post-programme	205
6.5.5	Continued perceived support and connectedness associated with the feedback as a source of motivation	208
6.5.6	When and why the post-programme feedback letter was not useful	210
6.6	SUMMARY	214
7	CHAPTER SEVEN: DISCUSSION	219
7.1	INTRODUCTION.....	219
7.2	SUMMARY OF FINDINGS IN RELATION TO ADDRESSING THE OVERARCHING RESEARCH QUESTIONS	219
7.2.1	What are men's reactions and responses to receiving information on objectively measured health risk indicators within the context FFIT?	219
7.2.2	How do men utilise pedometers as motivational behaviour change tools during and after taking part in FFIT?	226
7.2.3	What are men's reactions to receiving personalised feedback on their objectively measured activity patterns after taking part in FFIT?	236
7.2.4	Are there differences in the accounts of men who achieved and did not achieve their 5% weight loss target during the 12-week programme?.....	243
7.3	STRENGTHS AND LIMITATIONS OF THE CURRENT STUDY	245
7.4	FUTURE RESEARCH	247
7.5	IMPLICATIONS FOR PRACTICE AND FUTURE INTERVENTION DEVELOPMENT	248

7.6 CONCLUSION	252
APPENDIX 1 - PARTICIPANT LETTER	255
APPENDIX 2 - PARTICIPANT INFORMATION SHEET	257
APPENDIX 3 - CONSENT FORM	259
APPENDIX 4 - OBJECTIVELY MEASURED PHYSICAL ACTIVITY FEEDBACK LETTER	261
APPENDIX - 5 EXAMPLE OF ACTIVPAL FEEDBACK (BEGINNING OF PROGRAMME)	264
APPENDIX - 6 EXAMPLE OF ACTIVPAL FEEDBACK (END OF PROGRAMME)	265
APPENDIX 7 - TOPIC GUIDE: EXPERIENCE OF FEEDBACK.....	266
APPENDIX 8 - VOUCHER LETTER FOR TELEPHONE INTERVIEWS	270
APPENDIX 9 - PROTOCOL FOR ACTIVPAL	271
APPENDIX 10 - EXAMPLE OF FRAMEWORK MATRIX	274
APPENDIX 11 - EXAMPLE OF CODING PROCESS	275
REFERENCES	276

List of tables and figures

Table 1 Objective monitoring of men's activity patterns at the four clubs.....	83
Table 2 Sampling frame for the qualitative interviews	84
Table 3 Baseline sample characteristics.....	87
Table 4 Individual participant classifications and pseudonyms	88
Table 5 Impact of receiving feedback on health risk indicators	129
Table 6 General perceptions of wearing the pedometer	138
Table 7 Continuing use of the pedometer post-programme.....	163
Table 8 Men's general perceptions of wearing the activPAL3™	182
Figure 1 Schematic diagram of the Self-Determination Continuum. Adapted from Standage and Ryan (2012) and Ryan and Deci (2000a)	52
Figure 2 activPAL3™ monitor	81
Figure 3 activPAL3™ monitor with waterproof covering	81
Figure 4 Timeline and participant flow.....	86
Figure 5 Summary of men's reactions to receiving objective feedback on their health risk indicators pre-programme	128
Figure 6 Screenshot of framework matrix: men's reactions to receiving objective feedback on their health risk indicators	133
Figure 7 Continued increased PA and self-monitoring with technologies post-programme in relation to the SDT motivational continuum.....	176
Figure 8 Screenshot of framework matrix: men's experiences of using the pedometer before and after the FFIT programme.....	177
Figure 9 Men's utilisation of the post-programme feedback letter in relation to key theoretical tenets of SDT	217
Figure 10 Screenshot of framework matrix: men's experiences of wearing the activPAL3™ and receiving the objective feedback letter post-programme	218

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Author's declaration

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Alistair Craig Donnachie

A handwritten signature in black ink, appearing to read 'Alistair Donnachie', written in a cursive style.

1 Chapter one: Introduction

Obesity and lack of physical activity (PA) are increasing concerns, threatening both individuals' and public health (Gortmaker et al., 2011). In 2008, more than 1.4 billion adults were overweight (body mass index [BMI] ≥ 25 to 29.9 kg/m^2), and over 200 million men and nearly 300 million women were obese (BMI $\geq 30 \text{ kg/m}^2$) (WHO, 2012). Scotland has the highest incidence of obesity among males in Europe, with 69% of men and 36% of boys being in the 'overweight' or 'obese' categories (Logue et al., 2010). Being obese is a significant risk factor for mortality and morbidity from cardiovascular diseases, type 2 diabetes mellitus, cancers and musculoskeletal diseases (Finucane et al., 2011). Men are more likely than women to store higher levels of abdominal visceral adipose tissue which has been significantly associated with increased disease risk (Jacobs et al., 2010). Globally, physical inactivity is the fourth leading cause of mortality and is associated with increased risks of several non-communicable diseases (Lee et al., 2012, Kohl et al., 2012). Increased PA levels have consistently been shown to play a vital role in the maintenance of weight control (Wing and Phelan, 2005, Elfhag and Rössner, 2005). However, findings suggest that long-term adherence rates to PA and exercise recommendations following behaviour change interventions are poor (Silva et al., 2011).

Social constructions of masculinity may impact men's willingness to adopt and maintain health behaviours. Overweight/obese men often do not attend current NHS or commercial weight management programmes and are underrepresented in randomised trials of weight loss interventions (Robertson et al., 2014). Men are thought to be more likely to manage their weight through exercise alone (Kiefer et al., 2005) and to avoid other weight loss activities, such as dieting and slimming, often perceived as 'feminine' behaviours (e.g. Gough, 2007). Men are more likely than women to challenge biomedical definitions of 'overweight' and 'obesity' (e.g. Gray et al., 2011); and to be content with their size when overweight, often not wanting to appear 'too thin' (e.g. Monaghan, 2007). Furthermore, men are more likely to underestimate their vulnerability to obesity-related diseases (DeVille-Almond et al., 2011) and to eschew opportunities to receive valuable information

on their indicators of health risk which are frequently made available, particularly in research and other health-related settings.

Receiving personalised clinical or health-related feedback may significantly alter behaviour by challenging perceptions of invulnerability or risk to disease (e.g. McClure, 2002, Shahab et al., 2007). Therefore, knowing one's body weight, blood pressure or other health risk indicators may prompt behaviour change. However, few studies have investigated men's reactions to receiving feedback about objective measurements taken in research or other settings. Pedometer use has been shown to be associated with greater physical activity (PA) levels and appear to be useful motivational tools (Bravata et al., 2007, Kang et al., 2009). Previous findings have demonstrated that men respond well to feedback from pedometers and are an effective means of increasing their PA levels (Hunt et al., 2013). However, the ways in which men use pedometers as either self-regulatory or motivational tools are not well understood. Self-monitoring is one of the most effective behavioural change techniques to increase PA levels (Michie et al., 2009). Self-regulation theories contend that self-monitoring (a particular form of measurement and feedback) is an integral component of behavioural regulation. Evidence supports Behaviour Change Techniques (BCTs) congruent with Control Theory (e.g. self-monitoring of PA and weight, goal setting and feedback) (Michie et al., 2009). However, recent evidence suggests that BCTs (e.g. feedback) might operate differently depending on distinct phases of the behaviour change process, namely the adoption and maintenance of behaviour change (Dombrowski et al., 2012). It has been suggested that information on risk status might be more effective in the motivation stages of behaviour change, whereas self-monitoring and planning appear to be more efficacious in enhancing maintenance in the volitional phase (Schwarzer, 2008). Furthermore, the ways in which social environments or external factors may influence people's understanding and willingness to adopt important BCTs such as feedback and self-monitoring are not well understood.

Self-Determination Theory (SDT; Deci and Ryan, 2000, Deci and Ryan, 1985) offers a distinct theoretical framework for understanding motivational processes underpinning behaviours crucial for weight management. Contrary to traditional

theories of behaviour change which have viewed motivation as a unitary concept, SDT differentiates between qualitatively distinct kinds of motivation, presented on a motivational continuum, with each form of motivation having different levels of influence on behavioural regulation. According to SDT, behaviour can either be *amotivated* (i.e. defined as the state whereby an individual lacks intent to take action), *extrinsically motivated* (i.e. behaviour is performed for the attainment of an outcome independent from the behaviour itself) or *intrinsically motivated* (i.e. behaviour is performed because it is inherently enjoyable in itself).

Furthermore, SDT outlines four distinct forms of extrinsic motivation ranging from least to most self-determined or autonomous: *external regulation* (i.e. behaviour is performed in response to external pressure such as rewards or to avoid punishment); *introjected regulation* (i.e. behaviour is performed in response to internal pressure such as avoidance of feelings of guilt or anxiety); *identified regulation* (i.e. behaviour is motivated by the perceived value of its associated outcomes); and *integrated regulation* (i.e. behaviour is motivated not only by its valued outcomes but also because it has become assimilated with one's beliefs and values). According to SDT, internalisation of extrinsic motivations can occur when individuals recognise the value underpinning behaviours, assimilate them within their sense of self and develop a sense of ownership over the behaviours (Deci and Ryan, 2000), although one does not have to progress linearly along the continuum through each stage of internalisation (Ryan and Deci, 2000b). Rather, an individual can adopt a particular behavioural regulation at any time depending on prior experiences or situational factors.

Within SDT, progression along the motivational continuum depends on support for certain innate needs within a particular setting or social environment. These needs are *autonomy* (the need to feel volitional and the originator of one's actions), *competence* (the need to feel optimally challenged and able to interact effectively in one's environment) and *relatedness* (the need to feel connected or close to others and supported in one's pursuits). According to SDT, when satisfied, these needs allow individuals to experience greater self-motivation, wellbeing and healthy psychological development (Deci and Ryan, 2002). Socio-environmental conditions which support relatedness, competence and autonomy have been shown

to be conducive of ‘higher quality’ or more self-determined forms of motivation which, in turn, are associated with more adaptive behavioural and health outcomes (Ng et al., 2012). SDT thus offers a unique theoretical framework to understand the ways in which different forms of feedback may influence men’s motivations to embrace behaviour change.

In the next sections of this chapter, I describe the context for the research presented in this PhD research and move on to provide a detailed overview of the aims, objectives and research questions. Finally, I provide an overview of the entire thesis.

1.1 Research context

This study draws on data from men who had participated in the Football Fans in Training (FFIT) programme. FFIT is a 12-week gender-sensitised group weight loss and healthy living programme, delivered to overweight/obese men ($BMI > 28 \text{ kg/m}^2$) aged 35-65 via Scottish Professional Football League¹ (SPFL) clubs. To date, it has been delivered free of charge to participants. The development, content and optimisation of the FFIT programme is outlined elsewhere (Gray et al., 2013a). In short, the programme was specifically developed to work with rather than against existing notions of masculinity. FFIT was designed to be gender-sensitised, appealing to men in: context (professional football clubs), content and style of delivery (delivered by club community coaches; participative; informal, banter; branded t-shirts).

FFIT is delivered by community coaches in the traditionally male environment of the professional football clubs in men-only groups. When delivered as part of the research study, measurements including weight, height, BMI, waist circumference and blood pressure are taken by a research team and men fed back their weight and shown how overweight or obese they are on a BMI wheel. Facts around the science of weight management are presented simply, in a style which has been described as ‘science but not rocket science’ by FFIT participants (Wyke et al.,

¹ The Scottish Premier League (SPL) changed its name to the Scottish Professional Football League (SPFL) in June 2013.

2015); Club-based incentives and branding are incorporated to extend the appeal to male football fans, and coaches encourage peer-support and participative learning, and 'banter' to support discussion of more sensitive topics or issues. FFIT is addressing some of the current problems associated with male obesity by delivering a low-cost, evidence-based weight loss intervention to engage typically 'hard-to-reach' men.

FFIT was first delivered in the football season 2010-2011 (Gray et al., 2013a). A pilot feasibility trial suggested that overweight/obese men were attracted to the programme and that it had the potential to support men to lose weight (Gray et al., 2013b). Funding was obtained to undertake a full scale evaluation of FFIT's effectiveness (a randomised controlled trial (RCT) with primary outcome: percent weight loss 12 months after baseline) and cost-effectiveness (Wyke et al., 2015). At the same time funding was secured by the Scottish Premier League (SPL) for the costs of delivery of FFIT (from Scottish government and the Football Pools) at all SPL clubs for the 2011-2012 season and for a delivery in autumn 2012. The design for the RCT is described elsewhere (Wyke et al., 2015, Hunt et al., 2014a). In short, men were recruited in all 12 clubs within the SPL in the 2011-2012 season, and additionally in Hamilton Academicals who had taken part in pilot deliveries of FFIT in 2010-2011 but had been demoted into another league for 2011-2012. The trial required that baseline measurements were taken in all 13 clubs in August-September 2011, prior to the intervention group undertaking FFIT immediately (commencing FFIT within 2-3 weeks of baseline measurement at each club) and a waitlist comparison group being offered a place to do FFIT after the 12-month measures were undertaken in August-September 2012 (commencing FFIT in September 2012). Randomisation was on an individual basis within club, and 748 men were randomised to the intervention and waitlist comparison group. The RCT of FFIT found clear differences in weight loss, PA, diet, and other secondary outcomes, all in favour of the intervention group (Hunt et al., 2014a, Wyke et al., 2015).

However, the funding for delivery from Scottish government required SPL to also deliver the FFIT programme in February 2012. In order to accommodate this request, the FFIT research team recruited a sufficient number of men to fill all the

funded places available in the three deliveries starting in September 2011, February 2012 and September 2012. This was to ensure fairness to men taking part in the trial: men were told at baseline measurement sessions that they would be randomly allocated to one of the three deliveries, and that, if they met the eligibility criteria for the trial, they would be guaranteed a place on one of these three deliveries. Recruitment to gain sufficient numbers, not just for the RCT, but also to fill all places in the February 2012 deliveries, required considerable effort. Whilst the February 2012 group did not contribute to the RCT, it was clear that the February delivery of the programme provided an ideal opportunity to investigate additional factors that were beyond the scope of the RCT such as: the associations between self-reported and directly measured PA and sedentary behaviour and the contribution of change in objectively measured PA and sedentary behaviour on weight loss and the impact of various forms of objective feedback on men's motivation to engage in, and sustain subsequent increases in PA, weight loss and health behaviour change. It has also allowed exploration of factors associated with maintaining increased PA and weight loss (such as, the impact of the family environment on weight loss and health behaviours). Some of these issues have already been reported elsewhere (e.g. MacLean et al., 2014). All of the original research conducted for this thesis was undertaken with participants and clubs in the 'non-trial' deliveries of FFIT commencing in February 2012.

There were two main facets for the FFIT programme with regards to increasing the men's activity levels. The core PA component of the programme was an incremental pedometer-based walking programme previously shown to be effective (Baker et al., 2008, Fitzsimons et al., 2012). Further details of the PA components of FFIT are reported elsewhere (Wyke et al., 2015, Gray et al., 2013a). The walking programme included goal setting and self-monitoring. It focused on gradually increasing the amount of PA the men performed throughout their daily lives, using step-based goals each week to increase their average step count. At the beginning of the programme each of the men were given a pedometer which was intended to be used as a self-monitoring tool to help facilitate increases in their daily activity levels by giving them real-time objective feedback on the number of steps accumulated during bouts of walking. The men were provided

with a diary in their programme materials to record their progress as indicated by the feedback from the pedometer. The men's step goals increased as the weeks progressed over the programme and became more challenging. For example, in the early stages of the programme the men were told to aim to perform 1,500 steps in addition to their baseline levels, on at least three days of the week. As the programme progressed, goals were achieved and men became fitter, hence their targets increased. For example, they were told to aim to do 4,500 steps in addition to their baseline levels, on at least five days of the week. Towards the end of the 12-week programme, the men were encouraged to include other forms of PA (e.g. swimming) where possible in addition to their walking which would contribute towards their overall weekly activity goals (Wyke et al., 2015). The rule of thumb they were given was that around 10 minutes of moderate activity was equivalent to 1000 steps.

The second activity component of the programme included 'pitch-side' PA sessions delivered by the community coaches. These training sessions incorporated structured exercises that were tailored to individual fitness level and ability, and incorporated aerobic, muscle strengthening and flexibility exercises (Wyke et al., 2015, Gray et al., 2013a).

As discussed above, self-monitoring of behaviour is one of the most effective behaviour change techniques to support increased PA (Michie et al., 2009) and when utilised in combination with at least one other self-regulatory techniques, such as goal setting, as in FFIT, is even more effective (Kruger et al., 2006, Ogilvie et al., 2007, Nothwehr and Yang, 2007). However, most research to date has drawn on predominantly female samples (Ogilvie et al., 2007), and there is a paucity of research among men (Murphy et al., 2007). In addition, although findings from previous research with men taking part in earlier pilot deliveries of FFIT suggest that men responded positively to the walking component of the FFIT programme (Hunt et al., 2013) whether men continue to use pedometers as motivational or self-monitoring tools beyond the FFIT programme is not well understood, and we know little about the role of self-monitoring of PA in sustaining longer term behaviour change. Therefore, a central focus of this thesis

is to understand how overweight and obese men utilise pedometers as motivational behaviour change tools during *and after* taking part in the FFIT programme.

All men taking part in the 'February 2012' delivery of FFIT undertook a suite of objective measurements immediately before commencing the programme in January/February 2012 ('baseline') and 12-weeks later (post-programme measures). Information on each of the men's objective physical measurements (i.e. weight, waist circumference, BMI and blood pressure) was provided to the men by the fieldwork staff at the baseline measurement sessions performed at each of the clubs. To bring home the importance of these measurements, BMI is fed back to participants using a BMI wheel. There was anecdotal evidence from pilot deliveries of FFIT, as well as from another weight management programme for men (Gray et al., 2009), that this feedback on health risk status was important in motivating men to take part in the programme and make lifestyle changes. However, there is very little research in this field, and the ways in which overweight or obese men interpret and/or react to information on their health risk status or on feedback on personalised activity levels is not well understood.

Previous research suggests that providing external feedback on objective PA may influence behaviour change (Godino et al., 2013, Fitzsimons et al., 2013). Thus, if information on health risk was important in motivating behavioural change, I was interested in whether objective feedback on PA behaviour would be important in recognising and maintaining changes. The February 2012 delivery of FFIT provided an ideal opportunity for detailed examination of men's reactions to having their objective health risk and information on changes in objectively measured PA communicated back within the context of the FFIT programme, as well as to explore further men's use of self-monitoring in both behaviour change and in maintenance of behaviours.

The current PhD study utilises qualitative data from a subsample of the 306 men who were offered a place on 'non-trial' deliveries of FFIT commencing in February 2012 at 12 professional football clubs. The research here is unique in that it applies both SDT and sociological theory based on understandings of masculinities as frames within which to understand men's experiences of self-monitoring

activity, both in the early stages of and after doing the programme, receiving information on objectively measured health risk indicators before the programme and their objectively measured activity levels before and after the programme.

1.2 Aims and objectives and research questions

The overall aim of this PhD study is to understand more about the ways in which overweight and obese men (taking part in ‘non-trial’ deliveries of FFIT) experience and understand different forms of objective feedback.

Specifically, my objectives are to examine men’s experiences of receiving objective feedback on indicators of health risk prior to and after taking part in FFIT, and their objectively measured activity levels during and after taking part in FFIT. In doing this I wanted to understand the *meanings* that different forms of objective feedback have for overweight and obese men, while taking part in a weight loss and healthy living programme, and to explore whether these meanings varied between different groups of men.

The following research questions were formulated to address the specific aims and objectives of this PhD research:

- 1.) What are men’s reactions and responses to receiving information on objectively measured health risk indicators, within the context of the FFIT programme?
- 2.) How do men utilise pedometers as motivational behaviour change tools during and after taking part in the 12-week FFIT programme?
- 3.) What are men’s reactions to receiving personalised feedback on their objectively measured activity patterns after taking part in the 12-week programme?
- 4.) Are there differences in the accounts of men who achieved and did not achieve their 5% weight loss target during the 12-week FFIT programme?

1.3 Thesis structure

In chapter two I provide a detailed overview of the most relevant theoretical and empirical literature in relation to feedback and behaviour change, with particular focus on obesity, PA, masculinities and weight management. Chapter three provides an overview and discussion of the methods employed during this study. Chapter four addresses the first main research question in relation to the men's experiences of being given feedback on their objective health risk indicators and how they felt about being measured within the context of the FFIT programme. Chapter five provides an overview of the ways in which men discussed using the pedometer as a motivational tool to self-monitor their activity levels, both during and after taking part in FFIT, thus addressing the second overarching research question. Chapter six addresses the final main research question detailing men's reactions and responses to being given personalised feedback on their objectively measured activity patterns after taking part in FFIT. In chapter seven, I provide an overall summary and discussion of the findings of this thesis in relation to existing literature. I also consider the main strengths and limitations of the study as well as outlining areas worthy of further investigation in future. I conclude by emphasising the main practical implications of the study with specific reference to objective feedback in relation to future intervention development and wider settings and contexts.

2 Chapter two: Literature review

2.1 Introduction

In this chapter I will begin by providing context to the current study outlining the current issues in relation to obesity, physical inactivity and ill-health. Next, I provide a detailed overview of current theories of behaviour change and how they relate to understandings of feedback both theoretically and empirically. Finally, I discuss the two main distinct areas of literature most relevant to the current thesis in greater detail.

2.2 Obesity and health

Obesity and lack of physical activity (PA) are increasing concerns, threatening both individuals' and public health (Gortmaker et al., 2011). Global levels of obesity have doubled since 1980 (World Health Organization; WHO, 2012). In 2008, more than 1.4 billion adults were overweight (body mass index [BMI] ≥ 25 to 29.9 kg/m²), and over 200 million men and nearly 300 million women were obese (BMI ≥ 30 kg/m²) (WHO, 2012). Obesity is one of the most prominent and preventable causes of death and disease worldwide (Keenan et al., 2011). Research findings from over 200 countries published between 1980 and 2008 demonstrate that obesity levels are increasing in almost every part of the world (Finucane et al., 2011). The World Health Organisation (WHO, 2000) has termed the worldwide incidence of obesity an 'epidemic'.

Thus the United Kingdom (UK) is becoming an obese society (Gortmaker et al., 2011, Government Office for Science, 2007). According to the Foresight *Tackling Obesities Report* published in 2007, it is anticipated that by the year 2050 approximately 60% of all men and 50% of all women in the UK will be classified as clinically 'obese' if current trends continue, costing the NHS £10 billion per year, and with wider societal costs predicted to reach £50 billion (Government Office for Science, 2007). Scotland has some of the highest levels of obesity in the developed world and if current obesity rates follow the same trends as the United States (US), it is anticipated that levels may reach 40% by 2030 (Keenan et al.,

2011). Scotland has the highest incidence of obesity among males in Europe, with 69% of men and 36% of boys being in the 'overweight' or 'obese' categories (Logue et al., 2010). Obesity is also socially patterned. In Scotland, rates of obesity are higher in the most disadvantaged groups and amongst those with low educational attainment, with this relationship being stronger among women than men (Keenan et al., 2011). Particular ethnic minority groups seem to be more vulnerable to obesity (Government Office for Science, 2007). In the UK, South Asians and Africans appear to be more susceptible to abdominal obesity and associated risk factors than Caucasians, although the reasons for this remain unclear (Keenan et al., 2011).

Being obese is a significant risk factor for mortality and morbidity from cardiovascular diseases, type 2 diabetes mellitus, cancers and musculoskeletal diseases (Finucane et al., 2011). Excess bodyweight is associated with other negative health consequences, including: respiratory problems; liver and gall stone disease; stroke; high blood pressure; increased blood glucose; sleep disturbances; physical inactivity; reduced quality of life; mental health; and fertility problems (Keenan et al., 2011). Men are more likely than women to store higher levels of abdominal visceral adipose tissue which has been significantly associated with increased disease risk (Jacobs et al., 2010). Men therefore might attain greater health benefits from losing weight due to changes in body fat distribution (Sabinsky et al., 2006).

The rising levels of obesity, coupled with the associated adverse health risks and projected economic costs, have resulted in UK and Scottish Government drives to achieve effective management of the obesity 'epidemic'. The National Institute for Health and Clinical Excellence (2006) and the Scottish Intercollegiate Guidelines Network (2010) have developed specific recommendations in attempts to manage the rising incidence of obesity. Findings suggest that once an individual has gained weight, it is often very difficult to lose. Despite some successes, the majority of treatments have been shown to be of limited efficacy and efforts to prevent the rising levels of obesity are of vital importance (Government Office for Science, 2007). A modest weight loss of 5-10% can yield significant health benefits, such as cardiovascular disease and metabolic risk reduction (National

Institute for Health and Clinical Excellence, 2006, Scottish Intercollegiate Guidelines Network, 2010). However, many individuals find it very challenging to maintain weight loss and often progressively regain weight over time (Government Office for Science, 2007).

Obesity occurs at the individual level due to a chronic imbalance between energy intake (diet) and energy expenditure (PA and sedentary behaviour) (Gortmaker et al., 2011). Research findings suggest that some people may have a greater genetic biological predisposition to accumulate and preserve energy, with changes in the modern external environment revealing these underlying vulnerabilities (Government Office for Science, 2007). In the majority of developed countries, the most common form of working now is computer-based with people spending most of their time at work seated (McCrady and Levine, 2009). The ways in which people interact with their built environments have also changed which may also be an important contributor to the rising levels of obesity (Swinburn et al., 2011).

The aetiology of obesity is complex, with numerous inter-related behavioural, societal and environmental factors working together to create an ‘obesogenic environment’ (Government Office for Science, 2007). Successful prevention and management of obesity requires an integrated strategy (WHO, 2000). Long-term approaches are necessary at multiple levels that “include: individual behaviour change; interventions in schools, homes, and workplaces; and sector change within agriculture, food services, education, transportation, and urban planning” (Gortmaker et al., 2011, p. 839). Multi-level approaches may potentially be most effective in yielding successful changes which result in significant health benefits (Hillsdon et al., 2005). In recent years it has been widely acknowledged that ecological approaches to obesity prevention show the most promise in successfully identifying important factors for interventions to target (Egger and Swinburn, 1997, Swinburn et al., 2011). Ecological models of health behaviour emphasise the interaction between individuals and multiple levels of behavioural determinants within their physical and socio-cultural environments (Stokols, 1996, McLeroy et al., 1988).

Thus intervention strategies aimed at changing individual-level factors such as attitudes, knowledge, motivation, self-efficacy beliefs and intentions may be inadequate unless physical and socio-cultural environments are also tackled. Some have questioned whether it is even worthwhile to continue to study individual-level, psychological or self-regulatory aspects of behaviours important for weight control. While more extreme policy measures appear necessary to address the rising 'obesity epidemic' they will take considerable time to be adopted and are not yet fully developed (Teixeira et al., 2012b). Therefore, intervention strategies aimed at individual-level lifestyle factors currently offer the most cost-effective approach (Silva et al., 2011). According to Teixeira et al (2012b), the potential of 'so-called' individual-level interventions to be effectively delivered on a mass scale has not yet been fully investigated and thus should not "be underestimated when considering population behaviour change." (p. 1).

2.3 Physical activity and health

Globally, physical inactivity is the fourth leading cause of mortality and is associated with increased risks of several non-communicable diseases (Lee et al., 2012, Kohl et al., 2012). PA has been deemed a 'miracle drug' but receives surprisingly little attention from healthcare professionals or society (Wen and Wu, 2012). Although PA is often perceived only in relation to managing obesity and regarded as a secondary risk factor (Das and Horton, 2012), there is accumulating evidence to show that it plays an independent protective role in preventing the onset of several adverse health conditions (Blair and Morris, 2009).

The relationship between PA and cardiovascular disease shows an inverse, curvilinear dose-response relationship in that greater levels of PA and cardiorespiratory fitness are associated with lower levels of cardiovascular disease (Department of Health, 2004). Modest increments in PA levels, particularly among those who are in the most inactive category of the population, offer considerable reductions in coronary heart disease risk (Paffenbarger et al., 1986). Sub-optimal levels of PA have been shown to be associated with greater risk of all-cause mortality (Paffenbarger et al., 1986, Lee and Skerrett, 2001), cardiovascular disease (Kohl, 2001), overweight and obesity (Avenell et al., 2004), type 2 diabetes

mellitus (Kelley and Goodpaster, 2001), colon cancer, breast cancer (Thune and Furberg, 2001) and impaired musculo-skeletal health (Vuori, 2001). Increased levels of PA have also been shown to be associated with greater psychological and mental well-being (Biddle et al., 2000). However, despite the numerous health benefits associated with PA, the majority of individuals in both developing and developed countries are failing to achieve the minimum PA recommendations (WHO, 2010). In a series published in the *Lancet*, Kohl argued “in view of the prevalence, global reach, and health effects of physical inactivity, the issue should be appropriately described as pandemic, with far-reaching health, economic, environmental, and social consequences” (Kohl et al., 2012, p. 67).

Recommendations and guidelines on appropriate levels of PA have shifted over recent decades (O'Donovan et al., 2010). The American College of Sports Medicine (ACSM) has published a series of position statements outlining the amount and intensity of PA required to attain optimal health benefits. Evidence acquired throughout the 1970's and 1980's suggested that vigorous-intensity PA that resulted in increased maximal cardiorespiratory fitness (VO_2 max) was most beneficial towards achieving health benefits (ACSM, , 1975, American College of Sports Medicine, 1980). This resulted in the implementation of guidelines that mainly disregarded other forms of moderate-intensity PA. However, subsequent research findings in the 1990's showed that many health benefits could also be gained by undertaking moderate-intensity PA outside of traditional exercise settings (Pate et al., 1995). Therefore, the Centers for Disease Control and Prevention (CDC) and the ACSM published a report recommending that adults should perform 30 minutes or more of moderate-intensity PA on most days of the week (Pate et al., 1995).

In 2007 the ACSM published a further position statement outlining that normal healthy adults should perform 30 minutes or more of moderate-intensity (60-74% of maximum heart rate) PA on five or more days a week (which can also be obtained in several 10-minute bouts), or a minimum of 20 minutes or more of vigorous-intensity (75-85% maximum heart rate) PA on three or more days of the week (Haskell et al., 2007). Similar UK PA guidelines were published in the Chief Medical Officer's (CMO) report, entitled 'At least Five a Week' (Department of

Health, 2004), which was based on a synthesis of the most robust research data on PA and health (Biddle and Mutrie, 2009). These guidelines were updated by O'Donovan et al (2010) who published a position paper from the British Association of Sport and Exercise Sciences aimed at healthcare professionals. These guidelines stipulate that all healthy adults aged between 18-65 years should perform at least 150 minutes of moderate-intensity aerobic PA each week, or at least 75 minutes of vigorous-intensity per week, or a combination of both. In addition adults should perform muscle-strengthening exercises, such as resistance or strength training, on one or two days per week which is potentially most beneficial to older adults by reducing the impact of age-related muscle loss (sarcopenia) (O'Donovan et al., 2010). These recommendations are echoed in a report by the Department of Health (2011) outlining the updated UK PA guidelines, emphasising the importance of adults achieving at least 150 minutes of moderate-to-vigorous PA per week in bouts of ten minutes or more.

PA is often referred to as 'exercise' and 'physical fitness'. However, it is important to clarify the distinction between these unique concepts. Caspersen, Powell and Christenson (1985) define PA as "any bodily movement produced by skeletal muscles that result in energy expenditure" (p. 126). They stipulate that *exercise* is a subcategory of PA, defined as "planned, structured, repetitive, and purposive in the sense that improvement or maintenance of one or more components of physical activity fitness is an objective" (p. 128). While PA and exercise are behavioural processes, physical fitness is defined as "a set of attributes that people have or achieve that relates to the ability to perform physical activity" (Caspersen et al., 1985, p. 129). Two distinct components of physical fitness are recognised; one relating to health and the other to athletic ability. The health-related components of physical fitness include cardiorespiratory endurance or aerobic fitness, body composition, muscular strength, muscular endurance and flexibility. These aspects of physical fitness are considered to be the most important factors in relation to public health. The skill-related components of physical fitness, which include agility, speed, balance, muscular power and reaction time, are often considered more pertinent to maintaining athletic ability rather than health. PA can be performed at varying

levels of intensity and the majority of research has focused around the health benefits of moderate and vigorous PA. Moderate-intensity PA for adults is activity that requires approximately three to six times as much energy compared to rest, and is equivalent to brisk walking (Sallis and Owen, 1999). Vigorous-intensity PA for adults is activity that involves at least seven times as much energy compared to rest and is equivalent to jogging (Sallis and Owen, 1999).

2.4 Sedentary behavior

With recent technological advances, modern human beings live increasingly sedentary lifestyles compared to those of our ancestors (Katzmarzyk, 2010). Epidemiological studies over the past five decades have consistently shown that physical inactivity is a significant risk factor for death. Morris and his colleagues published a seminal paper in 1953 outlining the relationship between occupational PA and coronary heart disease, suggesting that sedentary bus drivers were at greater risk of disease than their more physically active conductor colleagues (Morris et al., 1953).

There is accumulating evidence that prolonged periods of sedentary behaviour is a distinct risk factor for ill-health, independent of moderate-vigorous PA (Hamilton et al., 2008). Findings from the Australian diabetes, obesity and lifestyle study (AusDiab) suggest that individuals who meet current PA recommendations for moderate-vigorous intensity PA may still be at risk of the adverse consequences of excess sedentary time (Dunstan et al., 2008). That is, individuals can be physically active but also spend a lot of time sedentary. Owen and colleagues (2010) refer to this as the ‘Active Couch Potato’ phenomenon.

Sedentary behaviour has been associated with several deleterious health outcomes, such as overweight and obesity, abnormal glucose metabolism, type 2 diabetes mellitus, hypertension, cardiovascular disease and the metabolic syndrome (Thorpe et al., 2011, Swartz et al., 2011, Franklin, 2011, Veerman et al., 2011, Lakerveld et al., 2011, Ford et al., 2011, Khaw et al., 2008). There is also growing epidemiological evidence to suggest that sedentary behaviour is associated with increased risk of mortality (Katzmarzyk et al., 2009, Matthews et al., 2012).

In a systematic review of quantitative longitudinal studies published between 1996 and 2011, self-reported sedentary behaviour was significantly associated with all-cause mortality, particularly cardiovascular mortality and with weight gain from childhood into adulthood (Thorp et al., 2011). There were mixed findings for the association between sedentary time, disease incidence, cardiometabolic risk and weight gain in adulthood. Three of the studies included in this review incorporated objective measures of sedentary behaviour, and one showed that markers of obesity predicted sedentary time. Thorp et al (2011) conclude there is a need for further prospective studies including device-based measures to objectively quantify sedentary behaviour.

The word sedentary is derived from the Latin word *sedere* which means to “sit” as distinct from lack of PA (Owen et al., 2010) and refers to a class of activities such as sitting, lying or reclining during waking hours that typically involve low levels of energy expenditure (EE) in the range of approximately 1.0-1.5 METs (multiples of basal metabolic rate) (Ainsworth et al., 2000, Owen et al., 2010). Research on PA and health has mainly focused on activities that involve EE of 3 METs or more (Owen et al., 2010). However, performing light-intensity movements involving typically around 2.5 METS (such as standing and small ambulatory movements formerly classified as sedentary) may contribute substantially to overall daily EE and provide substantially greater health benefits than previously anticipated (Owen et al., 2010). Despite the fact standing has minimal impact upon overall EE, it may provide greater benefits than sitting as it involves stimulation of large muscle groups in the lower parts of the body (Owen et al., 2011). Owen et al (2011) stipulate that sitting while performing PA (such as pedaling) is distinct from sitting quietly and therefore define sedentary behaviour as sitting without otherwise being active. Sitting for long periods of time significantly reduces levels of EE throughout the day and may impact upon the propensity to become overweight or obese (Hamilton et al., 2007). Obese individuals sit on average 2.5 hours a day longer than lean individuals (McCrady and Levine, 2009). It is possible that individuals who are overweight and not meeting current guidelines with regards to PA may be at additional risk due to the adverse effects of prolonged sedentary time (Hamilton et al., 2007).

2.5 Walking and health benefits

As discussed in chapter one, a central aim of this thesis is to understand men's use of pedometers during and after taking part in the walking component of the FFIT programme. In the next section I discuss the current evidence base in relation to walking and its benefits for health. Next, I outline the important role of PA for weight management.

Walking is a popular form of PA that it is accessible, requires little skill or equipment, has minimal financial costs and carries low risk of injury (Murphy et al., 2007, Morris and Hardman, 1997). Walking can be performed at a variety of speeds or intensities and is an acceptable form of moderate-intensity PA with associated health protective and psychological benefits (Baker et al., 2008, Murphy et al., 2007, Ainsworth et al., 2000). Walking is considered to be the best form of PA for sedentary adults attempting to increase their activity levels (Murphy et al., 2007). The Scottish Intercollegiate Guidelines Network (2010) advocate walking as an excellent form of exercise for overweight or obese people and its importance is recognised in government policy. For example, in 2014, the Scottish Government and the Convention of Scottish Local Authorities (COSLA) launched 'Let's Get Scotland Walking': The National Walking Strategy, which included three aims: 1) "Create a culture of walking where everyone walks more often as part of their everyday travel and for recreation and well-being"; 2) "Better quality walking environments with attractive, well designed and managed built and natural spaces for everyone"; 3) "Enable easy, convenient and safe independent mobility for everyone" (p. 4. , 2014).

Murphy (2007) conducted a meta-analysis of walking intervention studies published between 1971 and 2004 in an attempt to establish the impact walking behaviour may have on cardiovascular disease risk factors. The findings suggest that walking is an effective form of PA to enhance cardiovascular fitness, reduce body weight, and to decrease BMI, body fat and resting diastolic blood pressure among sedentary individuals with no pre-existing health problems. However, according to Murtagh et al (2015) a proliferation of research investigating the impact of walking on cardiovascular disease risk factors had occurred since 2004 with more studies

incorporating extensive outcome measures, including blood lipids and additional measures of adiposity. Murtagh et al (2015) therefore conducted an updated systematic review and meta-analysis of studies published between 1971 and 2012 to assess the effect of walking interventions on cardiovascular disease risk factors in previously inactive adults. Thirty two articles reported the effects of walking interventions on cardiovascular disease risk factors, 15 of which were not included in the previous review. Consistent with the original review (Murphy et al., 2007) walking interventions improved a number of cardiovascular disease risk factors, including greater aerobic capacity, decreased weight, waist circumference, body mass, body fat, systolic and diastolic blood pressure. However, no changes were detected in blood lipids or waist-to-hip ratio. The authors concluded that these findings highlight the importance of walking as a key component of public health promotion strategies to counter the increasing prevalence of cardiovascular disease.

In a cross-sectional study of 4563 adults, walking was most strongly associated with leanness compared with alternative forms of PA, such as cycling and taking part in sport (Murphy et al., 2012). Time spent walking at a brisk pace for personal transport was most significantly associated with leanness. These findings suggest that attempts to increase the duration of walking bouts may be an effective means of enhancing levels of PA among sedentary individuals. Strategies that promote walking at higher pace among those already engaging in walking behaviour at lower intensities could potentially be a successful means of increasing PA at a population level (Murphy et al., 2012). However, further longitudinal research is needed to establish whether there is a causal relationship between walking and leanness. Studies that incorporate objective methods of PA surveillance are recommended, as self-reported data is susceptible to social desirability bias and cognitive problems with accurate recall (Murphy et al., 2012).

2.5.1 Physical activity and weight management

The Scottish Intercollegiate Guidelines Network (2010) have developed specific PA recommendations for weight loss and prevention of weight regain for overweight or obese adults. These suggest that overweight or obese individuals should

undertake a volume of PA equal to approximately 1,800-2,500 kilocalories/week which is equivalent to around 225-300 minutes of moderate-intensity PA per week. This should be accumulated through five sessions of 45-60 minutes per week or lesser amounts of vigorous-intensity PA. They suggest that sedentary overweight or obese individuals should build up their activity levels gradually by accumulating PA levels throughout the day performing smaller bouts of activity for at least 10 minutes in duration. Increased PA levels have been shown to considerably reduce mortality and morbidity risk among overweight and obese individuals (Department of Health, 2004). However, despite being one of the most important factors contributing to long-term weight control, increased PA in isolation has been shown to yield only modest levels of weight loss (loss of approximately 0.5kg-1kg per month) with the greatest weight loss likely to occur within the first six months (Department of Health, 2004). This partly might be due to the fact that increased PA levels result in greater muscle mass which weighs considerably more than fat (Sallis and Owen, 1999). Therefore, greater levels of weight loss are more likely to occur as a result of decreased calorie intake. Weight loss associated with PA has been shown to be greater among males than females (Sallis and Owen, 1999).

Increased PA levels have consistently been shown to play a vital role in the maintenance of weight control (Wing and Phelan, 2005, Elfhag and Rössner, 2005). However, findings suggest that long-term adherence rates to PA and exercise recommendations following behaviour change interventions are poor (Silva et al., 2011). It is currently not understood why some individuals striving to lose weight are able to initiate and maintain this critical behaviour over time. Despite the proliferation of research over the past few years in relation to behaviour change, motivation and predictors of long-term behavioural maintenance among overweight/obese individuals remain poorly understood (Fortier et al., 2012).

In the next section of this chapter I provide a detailed overview of current theories of feedback and feedback interventions and how they relate to understandings of behaviour change, both theoretically and empirically. Next, I provide a detailed overview of current understandings of health behaviour change. Finally, I discuss the two main distinct areas of literature most relevant to the current thesis in

greater detail, namely Self-Determination Theory (Deci and Ryan, 2000) and theoretical understandings of masculinities and health.

2.6 Feedback and behaviour change

There is growing evidence in relation to the impact of various forms of feedback on behaviour change. This research has been influenced largely by advances in communication technology which have enabled vast amounts of data to be collected from large populations and, subsequently, the provision of individually tailored messages to appeal to people's unique preferences and requirements (Kreuter and Holt, 2001). Much of this research has focused on the impact of customised health communications (such as printed health information materials) and there remains a paucity of research in relation to how feedback operates in relation to actual behaviour change. There is also a need to understand when and how to utilise feedback most effectively and what the potential mechanisms of action might be (DiClemente et al., 2001). Currently little is known about the impact of personalised objectively measured PA feedback on behaviour or the effectiveness of different kinds of feedback on behaviour change (DiClemente et al., 2001, Watkinson et al., 2010).

Findings indicate that health-related materials based on some form of individual assessment and individually adapted, are more effective in achieving successful behaviour change than non-personalised information (Kreuter et al., 1999, Noar et al., 2007, Skinner et al., 1999). It is important to define feedback in relation to behaviour change and the various forms of feedback commonly utilised. Feedback can refer to several different forms of communication ranging from generic advice to the provision of highly personalised information over a prolonged period of time (Kreuter et al., 1999, DiClemente et al., 2001).

Three main types of feedback have been identified: generic; targeted; and personalised. *Generic* feedback provides personally relevant information that is not individualised and does not rely on any kind of unique assessment. *Targeted* feedback provides information that is more individualised with regards to its significance, although is not based on a personal assessment of individuals

(DiClemente et al., 2001). Targeted feedback is the most commonly utilised method of disseminating health education material aimed at various sub-groups of the population (Kreuter et al., 1999).

In contrast, *personalised* feedback is based on some kind of individual physical or clinical assessment and is the most individualised form of feedback. There are two different types of personalised feedback; normative and ipsative (DiClemente et al., 2001). Normative feedback refers to a comparison between an individual's current behaviour and the population norms regarding that particular behaviour. Ipsative feedback involves providing information in relation to an assessment of a person's behaviour over several different points in time allowing an individual to observe how their behaviour may have changed. Personalised feedback may also be risk- or problem-based. For example, some forms of feedback focus on a person's level of risk with regards to a particular disease, whereas other forms of feedback might provide information on a person's level of genetic risk to certain health conditions (DiClemente et al., 2001).

It has been suggested that people are more likely to process and interpret information that is perceived to be personally relevant to them (Petty and Cacioppo, 1981). In accordance with Petty and Cacioppo's (1981) Elaboration Likelihood Model (ELM), under most conditions people: process information actively; interpret messages attentively; relate to other information they have come across previously; and compare this information with prior experiences (Kreuter and Holt, 2001). This process has been referred to as 'central route' processing or elaboration (Hawkins et al., 2008). Research findings suggest that messages processed in this way are more likely to be remembered for longer and lead to enduring changes (Kreuter and Holt, 2001). Therefore it is hypothesised that health information that is individually personalised perhaps is more likely to be retained, discussed with other people, viewed as interesting and acted upon, than information that is non-personalised (Kreuter et al., 1999).

Individualised health education materials have been shown to impact on a variety of cognitive, affective and behavioural outcomes yielding significant changes in behavioural intentions and subsequent behaviour (Kreuter et al., 2000). The most

frequently utilised approach to individually-tailored health communication materials is 'behavioural construct tailoring' (Kreuter et al., 2000), whereby feedback materials are developed almost exclusively in relation to constructs from established behaviour change theories, such as the Transtheoretical Model (TTM; Prochaska and DiClemente, 1983), the Theory of Planned behaviour (TPB; Ajzen, 1991) and the Social Cognitive Theory (SCT; Bandura, 1986). This approach attempts to identify the most pertinent psychosocial variables relevant to each individual to motivate subsequent behaviour change (Kreuter et al., 2000). Findings of a meta-analytic review concluded that health behaviour messages tailored to the individual were more efficacious than non-tailored messages (Noar et al., 2007). These findings suggested that interventions utilising succinct, visually attractive feedback were more effective in achieving successful behavioural changes. Interventions that included more contact points were also more effective, perhaps enabling individuals to compare their responses over different points in time (i.e. ipsative feedback) (Noar et al., 2007).

2.6.1 Personalised objective feedback on indicators of health risk

Studies have investigated the ways in which people respond to information about their health status and disease risk, particularly with regards to receiving personalised feedback on biomarkers (McClure, 2002). Research findings suggest that receiving health-related or clinical feedback can significantly alter behaviour by challenging perceptions of invulnerability to risk or disease (Gibbons et al., 2005, Shahab et al., 2007). The premise that knowledge of one's risk or vulnerability to a particular disease may result in greater motivation to change behaviour is not novel (McClure, 2002), and is the key tenet of several behaviour change theories, such as the Health Belief Model (HBM; Rosenstock et al., 1988).

Penn, Moffatt and White (2008) conducted a qualitative investigation of perspectives on maintaining behaviour change following a diet and exercise intervention in people with impaired glucose tolerance (IGT), which is considered to be a stage in the development of type two diabetes mellitus. Many of the participants emphasised the impact of the initial diagnosis of IGT as a prompt to initiate and maintain subsequent behaviour change. The diagnosis of IGT was

perceived as both a threat to individual health and as reassurance, since they had not been fully diagnosed with diabetes.

McClure (2002) conducted a review of eight randomised trials to investigate the impact of biomarker feedback as a prompt for behaviour change. The findings suggest that exposure to health risk information may motivate subsequent behaviour change, but that the extent to which successful behaviour change occurs is influenced by the availability and intensity of accompanying treatment or support. However, the majority of studies included in this review relied upon retrospective self-report methods to assess behaviour change, which are vulnerable to recall bias and situation demand characteristics. Self-report methods also fail to capture the full spectrum of behaviours of particular interest (McClure, 2002).

Further research is also required to explore potential adverse factors associated with feedback. Receiving negative health-related feedback may cause psychological stress, anxiety, denial or fatalistic attitudes (McClure, 2002, Watkinson et al., 2010) or impede motivation and lower self-efficacy to engage in health behaviour change (McClure, 2002). Some individuals might also be falsely reassured of their current health status and perceived less need to adopt health behaviours (Watkinson et al., 2010). Further investigation is necessary to explore the association between health-related feedback and sustained behaviour change over time (McClure, 2002).

2.6.2 Pedometer feedback as a motivational tool for increasing physical activity

In this section I discuss the evidence base in relation to pedometer use and PA behaviour. Interventions aimed at increasing PA and walking behaviour typically utilise established BCTs, particularly self-monitoring and goal-setting strategies with the use of pedometers (Bravata et al., 2007, Richardson et al., 2008). Pedometers provide *real-time* objective feedback on step counts, and thus a means to self-regulate PA behaviour by recording the number of steps performed against a reference goal, such as 10,000 steps per day (Routen et al., 2014).

Pedometers have been shown to be effective motivational tools for increasing PA levels and reducing sedentary behaviour among people not meeting current PA guidelines (Baker et al., 2008, Fitzsimons et al., 2012). A systematic review conducted by Bravata et al (2007) indicated that people who wore a pedometer showed increases in their PA levels and decreases in BMI and blood pressure. They also found that having a personalised step goal was an important predictor of increased PA. They concluded that having a step goal and the use of a step diary might be important motivational factors for increasing PA levels (Bravata et al., 2007). Kang et al (2009) reported similar findings in a meta-analysis of pedometer-based intervention studies among adults. They concluded that pedometer use had a moderate positive effect on increases in PA levels which were equivalent to an average increase of 2,000 steps for the intervention group across all studies. The effects were larger among female participants and interventions that adopted a strategy of 10,000 steps per day as a step-based goal (Kang et al., 2009). Richardson et al (2008) conducted a meta-analysis of pedometer-based walking interventions on weight loss that did not incorporate dietary components. They concluded that pedometer-based walking programmes yield modest amounts of weight loss and that programmes of longer duration were more effective than shorter programmes. Research evidence suggests that goal-setting and self-monitoring used in combination are more effective in achieving increased PA (Kruger et al., 2006, Ogilvie et al., 2007, Nothwehr and Yang, 2007). However, most research to date has been conducted among predominantly female samples (Ogilvie et al., 2007), and there is a relative dearth of research among men (Murphy et al., 2007). In order to understand why different forms of feedback have been found to be effective as BCTs it is important to understand current theories of behaviour change.

2.7 Theoretical understandings of behaviour change

In this section I outline current theoretical understandings of behaviour change. Firstly, I introduce traditional theories of motivation and volitional behaviour most commonly applied to the domain of PA and weight loss behaviours. I then describe self-regulation and behavioural enactment theories of human behaviour which have added considerably to our understanding of how PA and exercise intentions are

translated into action and how different kinds of feedback might operate on distinct phases of the behaviour change process. In the final section I discuss recent advances in behaviour change science with specific reference to theoretical understandings of feedback and self-regulation. I then discuss alternative theories of motivation and behaviour change that are important for understanding the ways in which providing certain forms of feedback might influence the initiation and maintenance of behaviour change, particularly among overweight and obese individuals.

2.7.1 Traditional social-cognitive approaches to behaviour change

The adoption and maintenance of weight loss and related-health behaviours (i.e. PA and diet) are influenced by a wide range of physiological, psychological, social and environmental factors (Barker and Swift, 2009). Researchers within the domains of weight-management and PA have predominantly focused on the impact of psychological factors on behaviour. This is because particular psychological constructs (i.e. cognitions) are considered malleable to change through intervention (Hagger and Chatzisarantis, 2008). Researchers have traditionally tended to draw upon social-cognitive theories or social cognition models of behaviour and motivation based on expectancy-value theories of volitional behaviour. These models assume that behaviour occurs as a result of deliberation over the perceived consequences of performing a particular behaviour and the value attributed to potential outcomes (i.e. weighing up the potential pros and cons associated with performing a given behaviour). Social-cognitive theories hypothesize that cognitions, such as attitudes, knowledge, normative beliefs, efficacy and intentions, are the most important antecedents of behaviour and behaviour change. Intention-based social-cognitive theories converge on the assumption that the most proximal determinants of behaviours, such as PA and exercise, are behavioural intentions and perceived behavioural control (Ajzen, 1991) or self-efficacy (Bandura, 1977, Bandura, 1986). Therefore, according to these models, successful modification of these health-related cognitions offers the most promising means of altering behaviour (Barker and Swift, 2009).

While these theories have shown some success in predicting behavioural intentions, they have had limited efficacy in the prediction of actual behaviour (Armitage and Conner, 2001, Webb and Sheeran, 2006). The models have also received extensive criticism due to the fact they have several overlapping constructs and neglect the social and environmental context within which behaviour occurs (Ogden, 2009). These models assume that the influence of particular health cognitions is consistent across the behaviour change process, including initiation and maintenance. However, it has been hypothesised that different cognitive-processes are involved in both initiating a new form of behaviour and maintaining the behaviour over time (Rothman, 2000). These theories also fail to provide clear advice on how to effectively alter cognitions to promote actual behaviour change (Michie et al., 2008).

In response to the realisation that intentions or behavioural goals often fail to lead to subsequent action, researchers have recently focused on bridging the so called 'intention-behaviour gap'. Behavioural 'enaction' theorists (e.g. Carver and Scheier, 1982, Gollwitzer, 1999) have added considerably to current understandings of volitional behaviour change (Sniehotta, 2009). According to Sniehotta, Scholz and Schwarzer (2006), goal setting, or forming behavioural intentions, involves motivational processes, whereas goal pursuit entails the translation of health goals or intentions into action, which involves self-regulatory processes. Self-regulation can be defined as any effort undertaken to alter one's behaviour (Carver and Scheier, 1998). Without self-regulation, overweight/obese individuals would not be able to engage in a weight loss or exercise programme. Behavioural self-regulation (also referred to as action control) is comprised of three distinct components: self-monitoring; awareness of standards; and self-regulatory effort. Self-regulatory failure can occur in any one of these processes. Behavioural self-regulation is the most proximal volitional predictor of behaviour (Sniehotta et al., 2005a). Behavioural self-regulation theories (i.e., Carver and Scheier, 1982) are discussed in more detail in the following section.

Action planning or implementation intentions are defined as post-intentional, self-regulatory process which link specific cues in the environment or critical moments with responses that facilitate the conversion of goal intentions into action,

specifying exactly when, where and how to act (Gollwitzer, 1999, Sniehotta et al., 2006). These cues enable an individual to initiate a particular behaviour without conscious intent, preventing strain on self-regulatory resources (Gollwitzer, 1999). In contrast, coping planning is a barrier-focused mental simulation to assist individuals in successfully overcoming anticipated situations which might be encountered and could threaten performance of an intended behaviour (Sniehotta et al., 2005c). An example of coping planning is where an individual imagines a situation that might prevent them from performing a desired behaviour and mentally rehearses and plans ways of effectively overcoming these barriers (e.g., ‘if I plan my run for tomorrow morning and it rains I will go for a swim instead’) (Schwarzer, 2008). Gollwitzer and Sheeran (2006) conducted a meta-analysis of planning interventions which showed a positive medium to large effect size on health behaviours. Interventions incorporating both action and coping planning have been associated with increased exercise behaviour (Sniehotta et al., 2005b). More comprehensive models of health behaviour have attempted to incorporate both motivational and volitional aspects of behaviour (i.e. the Health Action Process Approach (HAPA; Schwarzer, 1992)). HAPA is a hybrid model of health behaviour which hypothesises that the initiation and maintenance of behaviour involves two distinct phases: a decision-making or motivational phase (such as, forming intentions); and a volitional or action phase (such as, action planning and self-monitoring)) (Schwarzer, 1992, Schwarzer, 2008).

2.7.2 Identifying active behaviour change ‘ingredients’

Systematic reviews of behavioural interventions are able to demonstrate overall efficacy in achieving weight loss and altering obesity-related behaviours (Avenell et al., 2004, Dombrowski et al., 2012). The interventions employed are complex and incorporate many components, yielding small effects in meta-analyses with significant heterogeneity in effectiveness (Michie et al., 2009). This greatly hinders the ability to identify associations between particular intervention components and overall effectiveness of interventions (Dombrowski et al., 2012). It also prevents conclusions being drawn with regards to the most effective design and development of future behaviour change interventions (Michie et al., 2009).

In the past, systematic reviews have attempted to explore particular components of weight loss interventions (Hardeman et al., 2000). However, major methodological developments over recent years have enabled reliable methods of identifying and specifying individual intervention components (Abraham and Michie, 2008). The development of a comprehensive, theory-linked taxonomy of BCTs has enabled accurate classification of published interventions, allowing systematic evaluation of intervention components and identification of those most likely to result in effective behaviour change (Abraham and Michie, 2008).

Another significant methodological development has been the use of meta-analysis and meta-regression to explore the impact of individual BCTs, and combinations of techniques employed, throughout various studies (Michie et al., 2009). Recent systematic reviews, applying meta-regression to identify individual BCTs, have shown the utility of this taxonomy for detailed analyses of behaviour-change interventions designed to alter PA and dietary behaviour.

Findings of a recent systematic review of PA and dietary behaviour interventions indicate that studies incorporating theoretically derived self-regulation techniques congruent with Control Theory (CT; Carver and Scheier, 1982), such as prompting self-monitoring, intention formation, specific goal setting, providing feedback on performance and review of behavioural goals, were significantly more effective than interventions that did not incorporate these techniques (Michie et al., 2009). Similar findings were found in a recent review of behavioural interventions aimed at changing dietary and/or PA behaviour among obese adults with additional risk factors (Dombrowski et al., 2012). Meta-regression indicated that interventions incorporating more BCTs aimed at dietary behaviour change, consistent with Control Theory, were associated with greater weight loss. Furthermore, the authors concluded that BCTs identified were associated with distinct aspect of the behaviour change process congruent with current theoretical understandings of behaviour change (e.g. Sniehotta et al., 2005a). Interventions including volitional BCTs (e.g. self-monitoring of behaviour) appeared more effective than interventions incorporating BCTs aimed solely at motivational aspects of the behaviour change process (e.g. providing instruction on how to perform a specific behaviour). These findings support those of other systematic reviews of RCTs

showing the effectiveness of behaviour change interventions incorporating BCTs congruent with Control Theory (Conn et al., 2008, Greaves et al., 2011).

Control Theory is part of a broader class of 'feedback loop' self-regulation models of behaviour change. In accordance with Control Theory people set a particular goal (e.g. performing a particular number of steps per day) which provides a 'reference value' against which on-going self-monitored behaviour (input function) is compared (e.g. feedback on number of steps from a pedometer). If a discrepancy is noted between the reference value and current behaviour, then the system signals to the person that they need to reduce the discrepancy (output function). Control Theory stipulates that a feedback loop consists of at least four key components: an input value gathered by an information collection function; a standard value; a comparator analysing differences between the input and standard; and an output function aimed at reducing differences between the input and standard (Carver and Scheier, 1998).

2.7.3 The role of life events in behaviour change and weight loss

These approaches to health behaviour and behaviour change have been criticised as they still contend that behaviour occurs as a result of a slow process of cognitive shifts and the development of plans. These analyses are also void of wider social and structural influences on behaviour, focusing too much on the role of individual cognitive factors (Ogden, 2009). Recent empirical findings suggest that the adoption and maintenance of behaviours associated with weight loss (i.e. exercise and dietary changes) often occur randomly in a non-linear 'quantum' fashion in response to a significant life event; also referred to as teachable moments, medical triggers or epiphanies (Gorin et al., 2004, Ogden and Hills, 2008, Ogden, 2009). These findings are congruent with Miller (2004), who stipulates that behaviour change may occur due to a sudden change in motivation or inspiration that is greater than the sum of its cognitive parts. They are also consistent with Resnicow and Vaughan (2006) who argue that behaviour change can be understood via the perspectives of Chaos Theory and Complex Dynamic Systems, whereby small changes in particular cognitions (i.e. attitudes or beliefs) may dramatically impact on motivation and behavioural outcomes.

Ogden and Hills (2008) propose a model of sustained behaviour change which emphasises the importance of different life events (relating to health, relationships or salient milestones, for example) in promoting behaviour change. The impact of these life events are mediated through sustaining conditions which include: reduced choice over unhealthy behaviour; reduced function of past behaviour; and a model of their health which emphasises behavioural causes and solutions. Sustained behaviour change is facilitated through a process of reinvention or a shift in identity, whereby individuals respond to the life event by reinventing themselves as a healthier person (Ogden and Hills, 2008, Ogden, 2009). Components of this model have now been operationalised and tested in quantitative studies (Ogden et al., 2009, Epiphaniou and Ogden, 2010). Ogden et al (2009) conducted a study among 538 members of a slimming club. Participants completed an online questionnaire concerning two life events which had caused subsequent changes in dietary and/or PA behaviour which resulted in either weight loss or weight gain. Most participants could recount a time when a particular life event had led to significant weight loss (74%) and weight gain (85%). There were also differences between the weight loss and weight gain events with regards to sustaining conditions. The weight loss event was perceived as reducing the choice over food and the function of eating; and as increasing the choice over exercise and the function of the behaviour. In contrast, the weight gain event was associated with the opposite effects.

In another study, Epiphaniou and Ogden (2010) found that successful dieters (n=431) (individuals who had lost 10% of their baseline weight at one year) reported a greater number of life events compared to unsuccessful dieters (n=592). They also found that successful dieters reported reduced choice over unhealthy dietary behaviours and increased choice over healthy behaviours such as exercise. These individuals were less likely to attribute their prior weight gain to underlying medical conditions or psychological reasons; and were more likely to endorse behavioural solutions to their weight gain. The findings of both of these studies provide empirical support for the role of life events in the successful adoption and maintenance of behaviour change (Ogden, 2009). However, further research is required to test the theory among more diverse samples.

2.8 Self-Determination Theory, motivation and wellbeing

Motivation refers to the energy, direction and persistence one holds with regards to performing a particular behaviour and is integral to all aspects of activation and intention (Ryan and Deci, 2000a). Traditional theories of motivation and health behaviour have viewed motivation as a unitary or singular concept, whereby individuals are believed to have more or less motivation to perform a particular behaviour or action (Ryan and Deci, 2000a, Ryan and Deci, 2000b). However, it has been postulated that not only is the amount or level of motivation important (i.e. how much) but also the orientation of motivation (i.e. the type of motivation). According to Ryan and Deci (2000b), the orientation of motivation refers to the underlying attitudes and goals that underpin one's behaviour, or the 'why' of actions or goal pursuits.

One theory that has gained significant empirical support over the past few decades in explaining human motivation and behavioural regulation is Self-Determination Theory (SDT; Deci and Ryan, 2000, Ryan and Deci, 2000a, Deci and Ryan, 2008a). Seminal work related to SDT began in the 1970s led by Edward Deci and Richard Ryan and the first comprehensive overview of SDT was published in 1985 (Deci and Ryan, 1985). SDT originated from a humanistic psychological approach and is an evolving macro-theory of human motivation, behaviour, self-regulation, personality development, affect, vitality and wellbeing (Deci and Ryan, 2008b). SDT seeks to account for human behaviour and motivation through individual differences in motivational orientations, interpersonal perceptions and contextual or environmental factors (Hagger and Chatzisarantis, 2008).

The various components of the wider SDT framework have been applied and utilised extensively throughout various spheres of life and across different cultures to explain goal directed behaviour and psychological development. Over the past few years there has been an emergence of SDT-based empirical research, particularly within the areas of sport and exercise (Hagger and Chatzisarantis, 2008), PA (Teixeira et al., 2012a) and more recently long-term weight control (Silva et al., 2011). Certain components of SDT have also been shown to be particularly important in the development of effective PA and exercise

interventions (Fortier et al., 2012). In this section, each of the key tenets of the larger SDT framework are outlined along with a review of some of the extant literature in relation to SDT, PA and weight control.

Compared with traditional theories of motivation and behaviour change (e.g. social-cognitive approaches), SDT attempts to provide a more comprehensive understanding and explanation of the complex processes underlying human motivation and behaviour. SDT differentiates between qualitatively distinct types of motivation founded upon distinct reasons and goals which drive behaviour, yielding different levels of influence on psychological health, wellbeing and behavioural persistence (Deci and Ryan, 2008b, Ryan et al., 2008, Ryan and Deci, 2000b). SDT contends that regulation towards any given behaviour can either be *intrinsically motivated*, *extrinsically motivated* or *amotivated*. Intrinsic motivation is defined as the inherent tendency for human beings to naturally engage in activities they find to be novel, interesting and optimally challenging (Ryan and Deci, 2000a). Intrinsic motivation is the most self-determined form of motivation and refers to behaviour being performed because it is inherently enjoyable or rewarding in itself and applies to activities such as sport and play (Ryan et al., 2009). In contrast, extrinsically motivated behaviour or action is performed purely for the attainment of a separable outcome that is independent (i.e. extrinsic) of the behaviour itself (e.g. attainment of a tangible reward or avoidance of punishment). Conversely, an individual who has little or no intention to act is characterised as being amotivated.

However, the detection of distinct forms of extrinsic motivation separated by unique behavioural regulations (each varying in their level of autonomy), has transformed the focus within SDT from exclusively intrinsic versus extrinsic motivation (Deci and Ryan, 2008a). A more sophisticated conceptualisation has been adopted between autonomous or self-determined motivation versus controlling of non-self-determined motivation (Hagger and Chatzisarantis, 2008). *Autonomous motivation* can be defined as the degree to which one perceives one's actions to be personally endorsed and performed with a sense of choice, freedom or volition. In contrast, *controlled motivation* refers to the extent one

feels pressure or coercion from external influences to perform a particular course of action (Deci and Ryan, 2008a).

SDT is formally a meta-theory comprised of five distinct sub-theories that combine synergistically to form the overall theoretical framework. The five sub-theories are: ***Cognitive Evaluation Theory*** (CET); ***Organismic Integration Theory*** (OIT); ***Basic Psychological Needs Theory*** (BPNT); ***Causality Orientations Theory*** (COT); and ***Goal Contents Theory*** (GCT) (Ryan, 2009). Despite each of these theories being distinct, they are all purported to be linked by the same underlying organismic and dialectical principles of the wider SDT framework. Each sub-theory was devised in response to empirical research to explore particular motivational phenomena with the aim of inductively building a broader theoretical framework. According to Deci and Ryan (2002), each of the basic assumptions and approaches remained consistent throughout the research process in order to ensure that each of the sub-theories remained coherently related and compatible within the wider SDT framework. In the next section the underlying organismic and dialectical principles of SDT which unite the five sub-theories is outlined. This is followed by a detailed overview of each sub-theory within the overarching SDT framework.

2.8.1 Organismic dialectical meta-theory

The organismic component of SDT holds that human beings are active organisms with an innate tendency towards psychological growth. In this regard, people are viewed as inherently inclined to seek out interesting activities, engage with challenges in their environments and integrate their experiences into a unified sense of self (Deci and Ryan, 2002). This tendency is epitomised in the phenomenon of intrinsic motivation, the inherent tendency for human beings to naturally engage in activities they find to be novel, interesting and optimally challenging (Ryan and Deci, 2000a). According to SDT, another crucial aspect of this natural tendency is the integration of oneself within the wider social environment. Therefore, SDT assumes that people have an innate tendency to integrate their own psychic elements to achieve more holistic self-regulation and integrate themselves within wider social structures. It is the combination of these

two facets of the integrative tendency that is considered essential to healthy development (Deci and Ryan, 2002).

However, SDT contends these organismic processes do not occur automatically and require the presence of specific social-environmental *nutriments* or needs to facilitate and promote these natural human tendencies. Therefore, SDT is grounded within a dialectical perspective whereby human beings' innate growth tendencies are dependent on particular environmental conditions that either support or hinder these inherent capacities. SDT contends that social contexts that support the universal needs of ***autonomy*** (i.e. the need to feel volitional and the originator of one's actions), ***competence*** (i.e. the need to feel optimally challenged and effectively interact in one's environment) and ***relatedness*** (i.e. the need to feel connected or close to others and supported in one's pursuits) enhance the innate processes of self-motivation and healthy psychological development (Deci and Ryan, 2002). However, social environments that undermine these basic needs suppress intrinsic motivation, self-regulation and wellbeing (Ryan and Deci, 2000a). Social environments that support these three needs facilitate our inner growth tendencies to be active and engaged, whereas conditions that thwart these needs lead to increased passivity and alienation (Ryan and Deci, 2000a).

The dialectical aspect of SDT therefore concerns the relationship between the ongoing human tendencies for growth and the external environmental or social conditions that facilitate or inhibit these natural processes. The underlying organismic and dialectical principles of SDT enable each of the unique sub-theories within the wider theoretical framework to interlink to gain greater understanding of social conditions that facilitate optimal psychological growth, wellbeing and behavioural persistence. These five sub-theories, and their various underlying components within the wider SDT framework, are delineated below.

2.8.2 Cognitive Evaluation Theory

As discussed above, SDT views intrinsic motivation as the natural propensity for human beings to utilise and develop their skills and capabilities (Ryan and Deci,

2000a). **Cognitive Evaluation Theory** (CET; Deci and Ryan, 1985) is a sub-theory within the wider SDT framework, devised to understand the antecedents of intrinsic motivation. The premise of CET is not to examine the specific causes of intrinsic motivation but rather to understand the impact of different social-contextual factors, environmental conditions and external events (e.g. feedback, threats and rewards) on intrinsic motivation. CET is therefore congruent with the overall supposition of SDT, viewing intrinsic motivation as an innate propensity which requires optimal supportive conditions in order to flourish (Ryan and Deci, 2000a). CET emphasises the crucial role of the basic needs for both competence and autonomy in promoting intrinsic motivation. Individuals must experience feelings of autonomy (i.e. self-determination) and competence for intrinsic motivation to occur (Ryan and Deci, 2000a).

The initial research on CET focused on the effects of extrinsic rewards on intrinsic motivation. According to Deci et al (1999), the effects of rewards entail an examination of the interpretation that the recipients are likely to attribute to the rewards (i.e. evaluation). This is termed '*functional significance*' and refers to the recipients' interpretation of the rewards with regards to supporting their feelings of autonomy and competence (Deci et al., 1999). Someone who performs a given behaviour for external contingencies (such as, financial gain or social recognition) will only sustain the behaviour while the extrinsic reward is anticipated. This is defined as the '*undermining effect*' and results as a consequence of the presentation of the reward which suppresses intrinsic motivation. The behaviour no longer emanates from within the individual and is performed entirely for external reasons outside of the self.

Another important tenet of CET is the '*informational function*' of a reward which inhibits the undermining effect of an external reward. For example, issuing a reward in a manner that is solely informative of one's competence has been shown to moderate the undermining effect (Hagger and Chatzisarantis, 2008). Rewards and other external events thus have two different ways of impacting upon intrinsic motivation. The informational component conveys competence which has a facilitative effect on intrinsic motivation, whereas the '*controlling*' function

promotes an external locus of causality and inhibits intrinsic motivation (Deci et al., 2001).

The interpersonal context or climate refers to the setting where rewards are delivered and is important as it impacts on people's autonomy and competence. If the setting or the people delivering the rewards are perceived as coercive or pressuring then the rewards are more likely to be perceived as controlling and hence to have a negative effect on intrinsic motivation. In contrast, when the interpersonal style adopted by those administering the rewards are perceived as less controlling, then the rewards issued are more likely to be perceived as informational, thus having a more positive effect on intrinsic motivation (Deci et al., 1999).

There is empirical support for the main facets of CET. For example, findings of a meta-analysis of 28 studies conducted over three decades, found strong support for the main theoretical propositions of CET (Deci et al., 1999). Conditions and events supportive of the needs for competence and autonomy (e.g. positive feedback on performance, optimal challenge and freedom from demeaning challenges) have been shown to enhance intrinsic motivation. Moreover, conditions or events perceived as undermining feelings of competence (i.e. negative feedback on performance) and autonomy (i.e. extrinsic tangible rewards) have been found to diminish intrinsic motivation. Research has also revealed that not only do tangible rewards hinder intrinsic motivation, but the imposition of deadlines, threats and pressured evaluations also negatively impact upon intrinsic motivation (Ryan and Deci, 2000a).

It is important to add that social relatedness has also been shown to be an important factor in promoting intrinsic motivation. However, several intrinsically motivated behaviours are often performed in isolation and without relational supports. Thus, relatedness is hypothesised to be less salient in maintaining intrinsic motivation than the more proximal needs for autonomy and competence. It has therefore been proposed that having a secure relational base on which intrinsically motivated behaviours can flourish is important (Ryan and Deci, 2000a, Deci and Ryan, 2000).

2.8.3 Organismic Integration Theory

The majority of behaviours performed in daily life are not in themselves inherently interesting or enjoyable, rather they are often carried out as a consequence of perceived social pressures or responsibilities. Understanding the reasons underlying why individuals develop the willingness to engage in behaviours that are not intrinsically motivating is an integral aim of SDT. Thus, while SDT posits that intrinsic motivation is the most important form of motivation, it is not the only form of self-determined motivation (Ryan and Deci, 2000a).

In contrast to previous work which viewed extrinsic motivation as being indubitably controlling (i.e. non-autonomous) and undermining of intrinsic motivation (e.g. DeCharms, 1968), Deci and Ryan (1985) considered extrinsic motivation to be a more complex phenomenon. They argued that extrinsically motivated behaviours are not perpetually controlling but could fluctuate in the extent to which they are internalised or experienced as autonomous (i.e. self-determined). Consistent with the organismic and dialectical propositions of SDT, the process of internalisation is viewed as an active and natural process whereby individuals actively transform externally regulated behaviours into autonomously regulated behaviours (Deci and Ryan, 2002). Internalisation and integration occur when individuals recognise the value of underpinning certain behaviours, assimilate them within their sense of self and develop a sense of ownership over that behaviour (Deci and Ryan, 2000). Therefore, when the internalisation process operates optimally, individuals are able to fully integrate regulations both internally and socially. Conversely, if the internalisation process is forestalled then regulations and values remain external or only partly internalised, resulting in less self-determined forms of regulation (Deci and Ryan, 2000).

In summary, if an important reference group encourages an individual to perform an uninteresting behaviour, the person will have a greater tendency to internalise the initially externally regulated behaviour (i.e. they will begin to integrate it with their sense of self) (Deci and Ryan, 2002). Therefore, the extent to which the behaviour becomes internalised (i.e. becomes part of the self) is dependent on the regulation or value that underpins it. The more fully a regulation underpinning a

particular behaviour becomes internalised, the more it will be integrated as part of the self, thus increasing the likelihood the behaviour will become self-determined.

Deci and Ryan presented a more dynamic theory of extrinsic motivation, called **Organismic Integration Theory** (OIT; Deci and Ryan, 1985) to account for the different ways in which extrinsically motivated behaviours are regulated. OIT is the second sub-theory within the SDT framework, formulated on the organismic premise of SDT that individuals have an innate tendency to integrate their on-going experiences, based on the extent to which specific needs are supported (Deci and Ryan, 2002). OIT presents a taxonomy outlining the different sub-types of regulation for extrinsic motivation differing in the extent to which they are autonomous (i.e. emanate from the self). Deci and Ryan assert that people can move along the OIT continuum from more controlling (i.e. extrinsic) forms of motivation towards more self-determined forms of motivation (see Figure 1). However, this progression is dependent on social-environmental circumstances supportive of the basic needs deemed crucial for internalisation and integration of behavioural regulation (Ryan and Deci, 2000a).

According to OIT there are four qualitatively distinct forms of extrinsic motivation, each varying in their level of autonomy or the extent to which their meaning and value have been internalised: **external regulation**; **introjected regulation**; **identified regulation**; and **integrated regulation**. The four processes represent the consequences of a continual person-environment interaction whereby an individual has been more or less successful in the internalisation and integration of a particular behaviour (Deci and Ryan, 2000). The main components of the OIT (or SDT) continuum will now be described.

External regulation is the most unstable and least autonomous form of extrinsic motivation whereby behaviours are performed in response to perceived external contingencies (e.g. tangible rewards) or to avoid punishment. Externally regulated behaviour is driven purely by external administration of contingencies (i.e. controlled) where no internalisation has occurred and is expected to show poor maintenance when these contingencies are removed (Ryan and Deci, 2000a).

Introjected regulation is the first form of internalised external motivation that occurs when an individual partly internalises the behaviour but does not fully accept it as their own (i.e. it has not been fully integrated as part of the self). Despite being internally driven, introjected regulation is still a controlled form of extrinsic motivation as the behaviour is contingent on rewards and punishments devised oneself (Ryan and Deci, 2000a). A typical form of introjected regulation is ego-involvement, whereby an individual is motivated to exhibit competence with regards to a particular behaviour to sustain feelings of self-worth or self-esteem (Ryan and Deci, 2000b). Therefore, introjected behaviours are often driven by internal rewards, such as feelings of pride following success or to avoid feelings of shame, guilt or anxiety as a consequence of failure (Deci and Ryan, 2008a). According to OIT both external and introjected regulations are forms of controlled or heteronomous motivation.

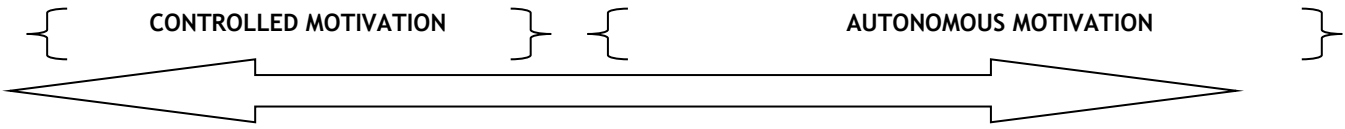
MOTIVATION TYPE	AMOTIVATION	EXTRINSIC MOTIVATION				INTRINSIC MOTIVATION
REGULATION STYLE	Non-regulation	External regulation	Introjected regulation	Identified regulation	Integrated regulation	Intrinsic regulation
INTERNALISATION	No	No	Partial	Almost full	Full	Not required
DEFINING FEATURES OR REGULATORY PROCESSES	Lack of - competence - contingency - intention - activity value	Presence of external - constraints - rewards - compliance - punishments	Focus on approval (i.e. self or others) - ego involvement - internal rewards and punishment	- Activity valued - Personally important - Consciously valued or pursued	- Synthesis of identified regulations to self - Awareness - Congruence	Action is based in interest, enjoyment and inherent satisfaction
LOCATION ON THE AUTONOMY CONTINUUM						
PERCEIVED LOCUS OF CAUSALITY	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal

Figure 1 Schematic diagram of the Self-Determination Continuum. Adapted from Standage and Ryan (2012) and Ryan and Deci (2000a)

Identified regulation is a more autonomous or self-determined form of extrinsic motivation, whereby an individual recognises or endorses the value of performing a particular behaviour and accepts it as their own (e.g. a person decides to exercise to lose weight or develop physical fitness). The behaviour is motivated by the perceived value and importance of the associated outcomes. Behaviours that are regulated via identification are predicted to be maintained longer than controlled forms of motivation as they are expected to be carried out independently of environmental rewards (Ryan et al., 2009). Thus, despite the behaviour being internalised it remains extrinsically motivated as it is purely instrumental in achieving a desired outcome or valued goal (e.g. performing exercise to lose weight) (Deci and Ryan, 2000).

Integrated regulation is the most self-determined form of extrinsic motivation whereby one's actions are fully volitional (Deci and Ryan, 2000). Not only is the behaviour personally valued, it has also become synthesised or integrated alongside one's core values, beliefs and needs. Therefore, what was once external regulation has become fully translated into autonomous self-regulation (or self-determined extrinsic motivation) (Ryan and Deci, 2000a). Integrated regulation shares many similarities with intrinsic motivation as it has a high level of autonomy and self-endorsement (Ryan et al., 2009). However, despite being volitional and valued, integrated behaviour remains extrinsically motivated as it is performed instrumentally for attaining some separable outcome, rather than for the inherent satisfaction or enjoyment associated with performing the behaviour itself (Ryan and Deci, 2000b).

Intrinsic motivation is situated at the far right of the OIT continuum (Figure 1) and viewed as the prototype of self-determined behaviour (Deci and Ryan, 2000). As noted earlier, researchers have combined the various behavioural regulations into two composites (i.e. autonomous versus controlled) depending on the extent to which extrinsically motivated behaviours are experienced as self-determined (Deci and Ryan, 2000). External and introjected regulations are the processes through which behaviours are controlled and thus are both forms of controlled motivation (Figure 1). In contrast, identified, integrated and intrinsic regulations are the foundations for

self-determined behaviour and thus characterised as autonomous motivation (Deci and Ryan, 2000).

It is important to note that according to Ryan and Deci (2000b), one does not have to progress linearly along the OIT continuum through each stage of internalisation. Rather, an individual can adopt a particular behavioural regulation at any time depending on their prior experiences or situational factors. For example, a person might primarily adopt a particular behaviour due to an external reward (i.e. external regulation). However, over time they might experience meaningful and valued aspects associated with performing the behaviour, yielding a shift in motivational orientation from controlled to more autonomous regulation (Ryan and Deci, 2000b). It is important to also note that controlling factors can still be present at different times and in some circumstances controlling forms of regulations might be more salient.

It is also important to stipulate that most intentional behaviours usually involve some combination of the different forms of motivational regulations. For example, someone might choose to perform a particular form of PA or exercise because they enjoy taking part in the activity itself (i.e. intrinsic motivation). However, they might also choose to exercise for some separable outcome, such as to maintain health or physical fitness (i.e. identified regulation) (Ryan et al., 2009). Thus, successful internalisation and integration of extrinsically motivated behaviours are dependent on socio-cultural or environmental conditions that are supportive of the three basic needs of autonomy, competence and relatedness. A recent systematic review by Teixeira et al (2012a) to examine empirical literature on SDT-related constructs and PA/exercise found support for the main tenets proposed by OIT. In their review, they found consistent positive associations between autonomous forms of motivation and exercise-related behaviour.

2.8.4 Amotivation

Autonomous and controlled motivations entail distinct forms of regulatory processes but are both examples of volitional or intentional behaviour (Deci and Ryan, 2000). In contrast, at the opposite end of the continuum to intrinsic motivation (Figure 1) is **amotivation**, defined as a state when one lacks intentionality to take action.

Similarly to extrinsic motivation, OIT views amotivation as complex and suggests there are several reasons why one might be amotivated to engage in action or perform a particular behaviour (Ryan et al., 2009). Amotivation is likely to occur when an individual does not recognise the value of performing a particular behaviour, does not believe performing the behaviour will result in a desired outcome, or lacks either a sense of competence or perceived control with regards to achieving a desired behavioural outcome (Ryan and Deci, 2000b). Individuals who are amotivated are void of both intrinsic and extrinsic motivation and therefore have a complete lack of self-determination regarding a particular behaviour (Deci and Ryan, 2000). According to Ryan et al (2009), there are various interventions that might be necessary in order to motivate an individual who is amotivated, such as enhancing that person's competence or efficacy (i.e. through increasing skills or knowledge) or assisting them to recognise value or interest associated with performing a given behaviour.

2.8.5 Basic Psychological Needs Theory

As stated earlier, another essential component of SDT is the concept of basic psychological needs, deemed to be universal and essential for human growth, psychological wellbeing and optimal self-motivation. Nested within the wider SDT framework is a third sub-theory, called **Basic Psychological Needs Theory** (BPNT; Ryan and Deci, 2000a). Congruent with the organismic dialectical perspective underlying SDT, BPNT describes the specific social-environmental factors necessary to promote wellbeing and the natural capacity to internalise and integrate particular values and regulations.

According to BPNT, social and cultural environments that support the needs of *relatedness*, *competence* and *autonomy* promote optimal growth, autonomous forms of motivation and greater psychological wellbeing (Ryan and Deci, 2000a). These three basic psychological needs, are viewed as being innate, essential and universal to all human beings and thus present across all cultures and developmental phases (Ryan and Deci, 2000a). These needs often have different expressions or alternative means through which they are satisfied, although the underlying proponents remain consistent. When these needs are not fully supported, our innate capacities for self-motivation, growth and wellbeing are suppressed (Deci and Ryan, 2002) which negatively impacts on our inherent tendencies for integration, often resulting in maladaptive behaviours (e.g. prejudice, aggression and psychopathology) (Deci and Ryan, 2002). Fulfilment of these three basic psychological needs both in immediate social environments and developmental histories is therefore of critical importance and plays a vital role in personality development, psychological health and the quality of behaviour exhibited within a particular context (Deci and Ryan, 2000, Deci and Ryan, 2002).

Relatedness and relatedness support: Relatedness is the basic need to feel connected or close to others and supported in one's actions. Relatedness also refers to caring for and being cared for by others, or having a sense of belonging to one's community (i.e. the inherent propensity to relate with and be accepted by others). Relatedness is the "psychological sense of being with others in secure communion or unity" (Deci and Ryan, 2002, p. 7).

BPNT contends that when individuals are in settings which support their relatedness needs, they are more likely to internalise immediate or salient skills and values (Ryan et al., 2009). Ryan and Deci (2000b) state that because extrinsically motivated behaviours are not inherently interesting or enjoyable, people are more likely to initially engage in an externally prompted activity they perceive as being valued by others (e.g. a peer group, family member or society) who they feel (or desire to feel) affiliated or connected to. Therefore, the internalisation of extrinsically regulated

behaviours can be facilitated when one feels related to the person, group or culture perceived as being responsible for propagating a particular behaviour or action (Ryan and Deci, 2000a, Ryan and Deci, 2000b).

Competence and competence support: The concept of competence is similar to concepts of self-efficacy shared with other theories of behaviour and motivation (e.g. Bandura, 1977, Bandura, 1986). Self-efficacy refers to one's confidence in their ability to perform specific skills or behaviours necessary to produce particular outcomes. However, unlike the concept of self-efficacy, competence is defined as the continued perceived need to feel efficacious with regards to one's skills (i.e. mastery and control) within one's environment (i.e. the domain in which particular behaviours are performed). As described earlier in relation to CET, competence is the perceived need to feel optimally challenged and to continually improve and sustain one's skills acquired through behaviours performed within one's environment (Deci and Ryan, 2002). Deci and Ryan stipulate that perceived competence is feeling effective and confident, rather than acquisition of skills or ability. Support for competence can be provided through significant others (e.g. coaches, teammates or family members) by providing optimal challenges or positive feedback. This, in turn, can promote feelings of competence and greater internalisation. However, negative feedback or criticism can weaken feelings of competence and result in disengagement from the behaviour (Ryan et al., 2009).

Autonomy and autonomy support: Autonomy is the fundamental and most important concept within the SDT framework. The need for autonomy refers to being the perceived originator of one's actions (i.e. regulation by the self). Autonomous behaviours are performed not only because they are intentional but also because they are volitional, that is they are carried out with a full sense of choice and self-endorsement (Ryan et al., 2009). It is possible to autonomously perform behaviours at someone else's request as long as the behaviour remains self-endorsed (i.e. autonomously driven). In contrast, an individual can also rely on another person for guidance or instruction in a means whereby no autonomy is experienced (e.g.

compliance or conformity) (Deci and Ryan, 2002). Therefore, autonomous actions are performed with a sense of willingness and freedom, based on interest or integrated values, even when they are influenced by external sources and are not accompanied by feelings of pressure or control.

The ability to act autonomously is dependent on social-contextual conditions. Environments can hinder one's autonomy by imposing external controls, such as contingent rewards, threats or punishment, or pressured evaluations. Conversely, autonomy-supportive environments provide acknowledgement of a person's frame of reference (i.e. taking the target individual's perspective), which, in turn, affords them rationale for performing a particular behaviour and encourages both choice and reflection (Ryan et al., 2009). Deci et al (1994) posit three contextual factors which are crucial for autonomy support: providing a meaningful rationale; acknowledging one's feelings; and conveying choice as opposed to control.

Autonomy-supportive environments are therefore crucial for autonomous or self-determined forms of self-regulation. Controlling contexts can generate extrinsic regulation if contingent rewards are afforded and the need for competence is supported. Similarly, controlling contexts can also produce introjected regulation if the needs for both competence and relatedness are supported. However, autonomy support is vital for the internalisation process and thus essential for a regulation to become fully integrated. In order to internalise and integrate a regulation, one must completely absorb its value and meaning. It is these meanings that become assimilated alongside a person's other salient values and goals within contexts that provide supports for the needs for competence, relatedness and autonomy (Ryan and Deci, 2000b). Despite being referred to as 'autonomy-supportive', these particular social contextual environments also enhance the propensity to satisfy the other basic needs of competence and relatedness. When a person's autonomy is supported within a particular environment they are likely to be more receptive to the other needs and feel more empowered to satisfy them (Ryan et al., 2009, Standage, 2012). It is also important to note that factors supportive of internalised extrinsic motivation (i.e.

autonomy-supportive) are comparable to those that help to sustain intrinsic motivation (Deci and Ryan, 2008a). However, supports for all three needs outlined within BPNT are essential for the internalisation and integration of behavioural regulations within OIT (Ryan et al., 2009).

According to Silva, Marques and Teixeira (2014), an SDT-based autonomy-supportive, motivational climate can be defined as the extent to which the setting or environment, and the people within that environment, are perceived as supportive of one's ability to satisfy all three basic needs: autonomy; competence; and relatedness. Silva et al (2014) outlined some of the most salient facets of a need supportive interpersonal climate, which include: giving an understandable and meaningful rationale for adopting and performing a given behaviour, promoting self-endorsement (i.e. relevance); respecting people's decisions by taking their unique perspectives into account and supporting their feelings and emotions (i.e. respect); encouraging individuals to pursue their own interests and make their own decisions by giving different options to choose from (i.e. choice); and avoiding use of controlling or coercive communication styles (e.g. guilt-inducing or authoritative language).

In order to promote optimal support for competence, Silva et al (2014) advocated: setting realistic goals and discussing realistic behavioural outcomes with people (i.e. what they should expect to achieve); supporting optimal challenge by personalising techniques and goals to their unique abilities and skills; providing informational (i.e. constructive) feedback on how people are moving towards achieving their goals in a non-judgemental way; and giving practical training in relevant skills and support (i.e. appropriate skills training). Finally, they argue, support for relatedness should be facilitated by: providing empathy (i.e. endeavour to understand the situation from one's unique point of view); showing genuine concern for the person (i.e. affection); garnering knowledge and information about the person (i.e. attunement); investing time and energy in the person (i.e. dedication of resources); and offering support when required (i.e. dependability).

In a review of SDT-related constructs and exercise/PA behaviour, Teixeira et al (2012a) found that less empirical research had been focused on the relationship between exercise need satisfaction compared with other aspects of SDT, such as behavioural regulations. In general, competence satisfaction was found to be the most commonly assessed need within the BPNT and was positively associated with exercise behaviour. However, there were mixed findings for associations between autonomy- and relatedness-need satisfaction and exercise/PA behaviour. The authors state that many forms of exercise are performed alone and thus relatedness might not be something that is important within those contexts. Variability in the measurement tools adopted and operational definitions across the different studies, along with limited applicability to diverse exercise contexts, were suggested as possible factors obscuring positive associations between autonomy and exercise behaviour. Moreover, a recent meta-analysis (Ng et al., 2012) of quantitatively synthesised studies across various healthcare and health promotion contexts confirmed that the satisfaction of the three basic psychological needs was associated with autonomous forms of motivation, and, in turn, with more positive health outcomes (e.g. PA/exercise), consistent with the SDT framework.

2.8.6 Goal Contents Theory

Another important component of SDT concerns the contents of goals people pursue and how these influence motivation and wellbeing. Congruent with BPNT is the notion that people's goal pursuits are related to motivation and wellbeing to the extent they satisfy the inherent needs for autonomy, competence and relatedness. Therefore, in order to understand the impact of different goals or aspirations on motivation and wellbeing, Ryan et al introduced another sub-theory into the wider SDT framework, called **Goal Contents Theory** (GCT; Ryan et al., 2009).

Based on the work of Kasser and Ryan (1993, 1996), GCT identifies two broad categories of goals that can satisfy or impede satisfaction of the three basic psychological needs. **Intrinsic goals**, such as maintaining one's physical health, self-acceptance or personal growth, contributing to one's community and developing

personal relationships, are inwardly oriented and deemed to be fundamentally important and gratifying. Intrinsic goals are hypothesised to be supportive of inherent growth tendencies, and hence satisfying the need for autonomy, competence and relatedness. Thus, along with the processes of intrinsic motivation and internalisation, intrinsic goals are regarded as a third expression of the natural organismic tendency (Vansteenkiste et al., 2006).

In contrast, **extrinsic goals**, such as portraying an attractive image, social recognition or fame and attaining material wealth, are outwardly oriented, focused on external factors and contingent on reactions or approval from others (Kasser and Ryan, 1996). Extrinsic goals are the foundations for feeling contingently valued or worthy and are not conducive of basic psychological need satisfaction (Ryan et al., 2009). In accordance with SDT, intrinsic goals are more likely to be associated with autonomous behavioural regulation whereas extrinsic goals are more likely to be associated with controlled behavioural regulation. However, the concepts of goal content (i.e. the ‘what’ of goal pursuits or behaviour) and behavioural regulation (i.e. the ‘why’ of goal pursuits or behaviour) are defined as theoretically distinct constructs (Deci and Ryan, 2000).

There has been considerable interest in recent years in the domain of exercise and PA to investigate the impact of both intrinsic and extrinsic goal contents from an SDT-based perspective (Sebire et al., 2009). Consistent with previous definitions of intrinsic and extrinsic life aspirations (Kasser and Ryan, 1996), researchers have more recently attempted to define domain-specific PA or exercise-related participation motives or goals (Sebire et al., 2008, Sebire et al., 2009). Participation motives of PA or exercise, such as health maintenance, social affiliation and skill development, are indicative of intrinsic goals, whereas participation motives, such as image improvement and social recognition, are indicative of extrinsic goals (Sebire et al., 2009). There is growing empirical support for the notion that endorsement of intrinsic goals (e.g. becoming healthy or physically fit) rather than extrinsic goals (e.g. enhancement of appearance or image) for being physically active, have been

positively associated with greater psychological need satisfaction, positive psychological outcomes and increased PA or exercise behaviour (Sebire et al., 2009). Teixeira et al (2012a) concluded from their systematic review of SDT-related constructs and exercise that empirical findings suggest a positive association between intrinsic goals (e.g. challenge, skill development, social affiliation and enjoyment) and exercise-related behaviour (Teixeira et al., 2012a). However, mixed findings were identified with regards to health and/or fitness motives and exercise behaviour, with the majority of studies showing no association. This was interpreted as perhaps being due to the ways in which these motives were operationalised. Teixeira et al (2012a) infer that while health and/or fitness motives can reflect more controlled motives (e.g. perceived pressure from a healthcare professional or desire for a thin body) they can also reflect more autonomous drives (e.g. health improvement, increasing strength and mobility for daily activities and greater energy and vitality). They also reported mixed findings with regards to body-related motivations, such as appearance or weight management and exercise behaviour.

2.8.7 Causality Orientations Theory

An additional theory within the wider SDT framework, *Causality Orientations Theory* (COT; Deci and Ryan, 1985), posits that people have an innate tendency to orient themselves towards their environments which yield specific behavioural and motivational outcomes. During the formulation of the wider SDT framework, Deci and Ryan suggest that someone's motivation, behaviour and experience within a particular context is a consequence of both the social environment and their inner resources which have evolved over time in response to their on-going interactions with their social environments (Deci and Ryan, 2002). COT is therefore concerned with the relatively stable individual differences (i.e. inner resources) in one's behavioural or motivational orientations towards the social environment (Deci and Ryan, 2002).

COT describes three distinct orientations that each person holds to some extent, varying in the degree to which they are self-determined. *Autonomy orientation* is the tendency to regulate one's actions on the grounds of self-endorsement and

interest (i.e. general tendencies toward intrinsic motivation and well-internalised extrinsic motivation). **Controlled orientation** is the tendency to regulate one's actions based on controls and directives outlining how they should behave (i.e. general tendencies towards external and introjected regulation). **Impersonal orientation** is the tendency for people to regard themselves as incompetent (i.e. ineffective) and not acting intentionally (i.e. general tendencies towards amotivation and lack of intentionality to act) (Deci and Ryan, 2002). Past research has shown that autonomy orientation has been positively associated with self-esteem and other indicators of wellbeing, whereas controlled orientation has been related to public self-consciousness and Type-A adverse coronary health risk behaviour pattern. The impersonal orientation has been associated with low self-esteem, self-derogation and depression (Deci and Ryan, 2002). COT has recently been extended to the domain of PA and exercise. However, in their recent review, Teixeira et al (2012a) identified just one study (Kwan et al., 2011) which examined the relationship between exercise causality orientations and self-reported exercise behaviour.

2.9 Masculinity and health behaviour

Evans, Frank, Oliffe and Gregory (2011) argue that “gender, the complex of social relations and practices attached to biological sex, is one of the most important socio-cultural factors influencing health and health-related behaviour” (p. 7). In recent years there has been considerable debate around the extent to which men's health behaviours are influenced by contemporary constructions of masculinity (Courtenay, 2000). Research in this area has predominantly focused on ways in which contemporary notions of masculinity influence men's help-seeking (O'Brien et al., 2005) and drinking behaviour (de Visser et al., 2009). However, somewhat less attention has been made to the ways in which performances of masculinity impact on men's willingness to engage in PA (Verdonk et al., 2010) or dietary behaviour change (Mróz et al., 2010, Mróz et al., 2011). It has been suggested that cultural constructions of masculinity and health, health behaviour and body shape may hinder men's attempts or motivations to lose weight (Hunt et al., 2013, Hunt et al., 2014a).

The following section provides an overview of current notions of masculinity in relation to men's health behaviour, particularly in relation to PA and diet.

2.9.1 Social construction of gender

Social constructionist approaches provide multifaceted accounts of the social world, with “overlapping perspectives that converge with and diverge from each other in various ways” (Brickell, 2006, p. 87-88). According to social constructionist theories of gender, dominant ideals of both masculinity and femininity exist within society that serve as models for action, prescribing appropriate behaviour for both men and women (Courtenay, 2000). West and Zimmerman (1987) refer to this process as ‘doing gender’ and they argue that gender should not be viewed as a set of traits, roles or displays, but instead as a process of social doings produced through individuals’ interactions with others and a continual accomplishment (West and Zimmerman, 1987). Therefore gender is conceived as an active process performed by both men and women, and girls and boys, which is continuously produced and reproduced across various social contexts.

2.9.2 Relational theories of masculinity and men's health behaviour

Connell's (1995) relational theory of masculinity has proven to be useful in gaining greater insight into men's health practices (Sloan et al., 2010). The central tenet of Connell's theory is the principle of ‘hegemonic masculinity’. According to this concept, men are expected to aspire to, or at least be cognisant of, a traditional code of masculine ideals which endorses rationality, autonomy, control, self-reliance, competitiveness, physical strength, emotional stoicism, risk-taking, and predatory heterosexual behaviour. In modern Western societies these dominant ideals benefit predominantly white, middle-class men with economic wealth (Courtenay, 2000). In accordance with this perspective Connell describes alternative masculinities that are ‘complicit’, ‘marginalised’ and ‘subordinate’ to this dominant form. Marginalised masculinities are defined according to social structures including age, ethnicity, race and social class. Subordinate masculinities also exist that are positioned in a

subordinated position to hegemonic status. Connell (1995) recognises that while some men may actively reject several of these ideals, all men benefit from hegemonic masculinity as it sustains patriarchy and the subordination of women. Connell refers to this process as complicit masculinity whereby men achieve the benefits of hegemonic masculinity without actively conforming to hegemonic ideals. Connell (1995) argues that dominant ideals of hegemonic masculinity are often positioned in direct opposition to what is seen as feminine. This has negative connotations for men's health beliefs and behaviour as anything perceived as health promoting is likely to be viewed as feminine and therefore ignored or rejected (Mróz et al., 2010).

Courtenay (2000) discusses this social constructionist theory in relation to masculinity and men's health behaviour. In line with Connell's (1995) theory of masculinity, Courtenay (2000) proposes a relational theory of gender and health stipulating that men's health beliefs and behaviours are utilised in the social structuring of gender and power. Courtenay (2000) contends that, in an attempt to adhere to dominant masculine ideals men refuse to participate in health promoting behaviours or seek help in an endeavour to conceal weakness or vulnerability. He also argues that this behaviour is legitimised across various social and institutional structures allowing men to sustain their social dominance as well as maintaining men's poorer health status.

Research findings indicate widespread endorsement of hegemonic ideals that men should be reluctant to engage in health related behaviours that are associated with feminine spaces and risk portraying men as weak or vulnerable (Robertson, 2003, Galdas et al., 2005). While Connell's theory of masculinity has been useful in conceptualising how performances of masculinity influence men's health behaviour, recent findings suggest that hegemonic masculinity should be defined as more of a cultural ideal rather than a fixed collection of principles to which all men are expected to conform (de Visser et al., 2009). Findings support the existence of domain specific masculinities that are influenced by age, social class and cultural norms (Sloan et al., 2010). Lohan (2007) argues it is important to refrain from conceptualising hegemonic masculinity as a stable set of traits embedded within

masculine culture. It is now widely accepted that masculinities are myriad, regularly disputed and constantly evolving in response to the various social and cultural contexts in which they operate (O'Brien et al., 2005, Sloan et al., 2010, Wetherell and Edley, 1999). In light of this research Connell and Messerschmidt (2005) have revised the concept of hegemonic masculinity. They advocate the need for a more complex notion of hegemonic masculinity that accounts for the ambiguities and internal contradictions observed in men's social interactions (Connell and Messerschmidt, 2005).

2.9.3 Performances of masculinity in relation to weight loss

Cultural constructions of masculinity appear to present significant barriers for men in relation to losing weight. Men are more likely to challenge current biomedical definitions of overweight and obesity (Gray et al., 2011), often referring to film stars and International athletes who are in perfect physical condition but whose BMI would classify them in the obese categories (Monaghan, 2007). Findings also indicate that men often have a poor understanding of the health benefits associated with weight loss and often underestimate their own vulnerability to obesity-related diseases (DeVille-Almond et al., 2011). Concerns about being perceived as too thin or weak may also contribute to men being more unlikely to engage in weight loss efforts (Kiefer et al., 2005, Sabinsky et al., 2006, Tiggemann et al., 2007, Monaghan, 2007).

Empirical research has suggested that men's eating practices can be influenced by dominant notions of masculinity (Mróz et al., 2011, Mróz et al., 2010, De Souza and Ciclitira, 2005, Roos et al., 2001, Newcombe et al., 2012). For example, traditional hegemonic practices such as eating high fat foods and excessive alcohol consumption can be important means of establishing masculine identities (de Visser et al., 2009, Sloan et al., 2010). Some studies have also suggested that women tend to be more interested in managing their weight and consume more fruit, fish and vegetables compared with men (Wardle et al., 2004), whilst men tend to have poorer knowledge regarding health benefits associated with proper nutrition and prefer to consume food containing large quantities of red meat and animal fat (Kiefer et al., 2005). It has

been suggested that men's attitudes towards diet and nutrition are generally more simplistic than women's and driven by pleasure and satiety more than nutritional values (Kiefer et al., 2005). Media representations of men and diet reinforce traditional ideals of masculinity in relation to men's reluctance to partake in healthy eating (Gough, 2006, Gough, 2007). Men are more resistant to health promotion campaigns outlining the benefits of healthy-eating, often perceiving these messages with scepticism (Gough and Conner, 2006). Excessive alcohol consumption may provide further challenges for men attempting to lose weight because men consume greater levels of alcohol compared with women (Emslie et al., 2009). Alcohol consumption, in addition to competitive sport, has consistently shown to be an important means of constructing masculine identities and establishing masculine 'capital' (de Visser and Smith, 2007, de Visser et al., 2009, Peralta, 2007, Lemle and Mishkind, 1989, Hunt et al., 2013).

PA and exercise has been shown to be an important means of achieving physical fitness and affirming masculine identity (Saltonstall, 1993, Verdonk et al., 2010). Engagement in PA has been shown to be an effective way of maintaining a strong masculine identity whilst simultaneously engaging in behaviours that conflict with traditional hegemonic ideals (Sloan et al., 2010). However, the majority of research has focused on younger men, and the association between PA and masculine ideals, such as competitiveness and strength. Oliffe et al (2009) argue these ideals may not be as salient among other groups of men and advocate further research among groups of men who do not endorse contemporary hegemonic masculine ideals.

2.9.4 Masculinity and body image

Media representations of men in health and fitness magazines often reinforce masculine ideals congruent with hegemonic masculinity, portraying images of men with lean and muscular bodies (Stibbe, 2004). Rather than emphasising the important health benefits of regular exercise, these magazines often promote ideologies more closely associated with hegemonic ideals. These magazines show pictures of men with toned, muscular physiques that all men are supposed to aspire to, while

simultaneously emphasising behaviours incongruent with these images, such as the importance of consuming large quantities of beer and red meat. These physiques are often impossible for most men to attain via healthy means (Tiggemann et al., 2007).

As a result of the discrepancy between media portrayals of men and the body size and shape of 'real' men, it has been argued that men are experiencing increasing levels of body dissatisfaction, akin to those experienced by women in Western societies which have been widely documented (Tiggemann et al., 2007). Men's body dissatisfaction has been associated with many adverse health consequences, such as steroid use, obsessive exercise behaviour, eating disorders, low self-esteem and depression (Tiggemann et al., 2007). It has been suggested that while some overweight or obese men may appear to show a desire for an aesthetically lean and muscular physique, they often remain unmotivated to engage in weight loss efforts (Grogan and Richards, 2002, Sabinsky et al., 2006). Sabinsky et al (2006) argue that leanness and health are viewed as 'feminine' suggesting that weight loss efforts are more likely to be adopted if alternative benefits are emphasised, such as enhanced work performance or ability to run faster for longer.

2.9.5 Masculine 'capital' and health behaviours

In the face of these cultural messages about 'appropriate' masculine performances and health, men are said to be faced with a predicament between showing they 'don't care' about health and acknowledging they 'should care' (Robertson, 2003). Many men do not perceive obesity to be an issue that impacts upon them directly (DeVill-Almond et al., 2011), and health promotion attempts often have little effect (Gough and Conner, 2006). de Visser et al (2009) argue that men are able to construct alternative, credible masculine identities by mobilising competence in other masculine domains to compensate for a lack of masculine 'capital' in other areas. These findings emphasise the need for novel, health promotion attempts which appeal to 'high-risk' groups of men, harnessing particular masculine ideals such as decision-making, autonomy, control, competitiveness and rationality, allowing men to retain

masculine ‘capital’ whilst engaging in health promoting behaviours (Sloan et al., 2010).

Therefore, as posited by de Visser and colleagues, performing ‘masculine’ behaviours is an important means of demonstrating masculine competence or accumulating masculine ‘capital’. It is argued that such masculine ‘credit’ can be drawn upon or ‘traded’, in order to legitimise adoption of behaviours or practices perceived as discordant or incongruous with common cultural ideals of masculinity. Frequently adopted masculine behaviours, such as PA, exercise and sport, can provide significant health enhancing benefits, when they are not performed to ‘extremes’ (de Visser and McDonnell, 2013) and are important behaviours for long-term weight management. Moreover, performing these behaviours is often an important means of demonstrating masculine competence as they are congruent with dominant cultural notions of masculinity.

These conceptualisations of masculinities have been shown to have particular utility in relation to understanding men’s health-related behaviours and have led to innovative approaches for engaging men via health promotion efforts and interventions that are devised to be congruent with, instead of against, dominant notions of masculinity. For example, previous findings indicate that health promotion attempts designed specifically for men can be effective in engaging men in significant lifestyle and behaviour changes (Gray et al., 2013b). Recent evidence showed how FFIT enabled men who took part in the programme to enhance their masculine capital, both physically and symbolically, through close affiliation with the professional football clubs whilst taking part in a weight management programme (Hunt et al, 2014b).

2.10 Summary

Current knowledge of men’s reactions to information on their indicators of health risk is insufficient. As discussed in this review, prior research suggests that personalised health information is more likely to be recalled, discussed with others, viewed as

interesting and responded to, than information that is non-personalised (Kreuter et al., 1999). However, previous research has focused predominantly on the impact of individualised clinical or biomarker feedback on behaviour change (McClure, 2002). Furthermore, the focus has mainly been on the utilisation of social cognition or self-regulation theories to understand the potential mechanisms of action underpinning feedback interventions and behaviour change. The review therefore highlights a paucity of research in relation to men's reactions to information on objective health risk indicators, specifically within the context of community-based PA and/or weight management programmes. Moreover, the influence of social or environmental factors on men's responses to information on their health risk status is not well understood.

Previous studies have qualitatively explored the motivational dynamics associated with PA behaviour, but these have drawn on predominantly female samples (e.g. Huberty et al., 2008, Kinnafick et al., 2014, Sabiston et al., 2009). Hence, there is an evidence gap concerning the motivational processes underlying *men's* PA behaviours, both during and after taking part in PA and/or weight management programmes. Moreover, men's motivations for adopting important self-regulation skills in relation to walking and other forms of PA are not well understood. Self-monitoring of behaviour is one of the most effective behaviour change techniques to support weight loss and increased PA (Michie et al., 2009). Pedometer use has been shown to be associated with greater PA levels and appears to be a useful motivational tool (Bravata et al., 2007, Kang et al., 2009), and a form of self-monitoring that is popular with men (Hunt et al., 2013). However, the ways in which men use pedometers as motivational tools are not well understood.

In this chapter I have provided an overview of the most relevant theoretical and empirical literature in relation to obesity, PA, feedback, behaviour change and masculinities. I covered a broad range of literature in relation to feedback and behaviour change with greater explicit focus on SDT and theoretical understandings of masculinities. Combining these two conceptually distinct approaches offers an innovative means of understanding the meanings that distinct forms of feedback have

for overweight and obese men, while taking part in a men only weight management programme.

To recapitulate, the aim of this PhD thesis is to understand more about the ways in which overweight and obese men taking part in Football Fans in Training (FFIT) experience and understand different forms of objective feedback, and to explore the extent to which these meanings varied between different groups of men. The following research questions were devised to address the specific aims and objectives of this research:

- 1.) What are men's reactions and responses to receiving information on objectively measured health risk indicators, within the context of the FFIT programme?
- 2.) How do men utilise pedometers as motivational behaviour change tools during and after taking part in the 12-week FFIT programme?
- 3.) What are men's reactions to receiving personalised feedback on their objectively measured activity patterns after taking part in the 12-week programme?
- 4.) Are there differences in the accounts of men who achieved and did not achieve their 5% weight loss target during the 12-week FFIT programme?

In the next chapter I discuss the methods adopted in the study to address my research aims as well as providing a detailed overview of the research procedures.

3 Chapter three: Methods

3.1 Introduction

This chapter provides an overview and detailed discussion of the methods employed during this PhD research. I first provide an overview of the context for the research, then a rationale for the methodological approach adopted. Finally, I provide a detailed description of the research methods and procedures.

3.2 Setting and context

The research which formed the basis for the PhD was conducted within the context of a men only weight management intervention called Football Fans in Training (FFIT). Twelve SPFL clubs delivered the 12-week FFIT programme between February-April 2012. The fieldwork was conducted during and just after the main 12-week component of the programme had ended.

As I described in the introduction, the aim of the research is to examine men's experiences of receiving objective feedback on indicators of health risk (e.g. weight, BMI and blood pressure) prior to and after taking part in FFIT, and their objectively measured activity levels before and after taking part in FFIT. In doing this I wanted to understand the *meanings* that different forms objective feedback have for overweight and obese men while taking part in the FFIT programme, and to explore whether these meanings varied between different groups of men.

I had access to men taking part in FFIT at four football clubs where the programme was being delivered; these men formed my sampling frame. I was able to ask participants to wear activPAL3™ monitors before and after the programme to objectively measure the levels of their physical activity, and the duration and timing of their sedentary behaviours, to feed back this information to them, and to ask for their views and experiences of all measurement experiences. A guiding principle in this research was to explore whether there were differences in the responses of men

who had successfully lost weight during the 12-week programme and those who had not. I aimed to gain an understanding of the men's experiences using a method of analysis grounded in their accounts before applying existing theoretical concepts to interpreting the data. This required the use of qualitative methods and I provide a justification for this choice of methodology below.

3.3 Rationale for utilising qualitative methods

Qualitative research attempts to explain and understand the meanings which individuals ascribe to various experiences within their social worlds (Snape and Spencer, 2003). Rather than attempting to predict or control particular variables, the principle role of qualitative research is to gain understanding (Lyons, 1999).

According to Mason the specific benefits of qualitative research lie in the knowledge it provides of the dynamics of social processes, change and social context, and its ability to answer 'how' and 'why' questions" (Mason, 2006, p.16). Lyons (1999) states that qualitative research permits an integration of the social world into health research, allowing deeper insights into people's experiences, often hidden by quantitative research methods.

Qualitative interviewing is one of the most frequently used methods for 'generating' qualitative data (Mason, 2002). Interviews provide the ability to obtain comprehensive insight into people's subjective experiences (Ritchie, 2003). Most qualitative researchers ascribe to the premise that knowledge and evidence are situated within the social context. Interviews enable qualitative researchers to focus on social phenomena or processes of interest so that knowledge can be accessed or produced (Mason, 2002). Some qualitative researchers attest that knowledge is not only accessed but also constructed via interaction during the interview process. Mason asserts that "meanings and understandings are created in an interaction, which is effectively a co-production, involving researcher and interviewees" (Mason, 2002, p. 63). Therefore, qualitative interviewing is often perceived as concerning "the construction and reconstruction of knowledge more than the excavation of it" (Mason,

2002, p. 63). According to Ritchie (2003) qualitative interviews are appropriate for research that necessitates detailed understanding of intricate or complex issues as they yield comprehensive and substantive data. Interviews also provide researchers with the capacity to gain additional elucidation of ambiguous issues or concepts.

Mason describes qualitative interviews as “the interactional exchange of dialogue” which can be conducted either face-to-face, over the telephone or the internet (Mason, 2002, p. 62). There are different kinds of qualitative interview referred to as either ‘in-depth’, ‘semi-structured’ or ‘loosely structured’ forms of interview (Mason, 2002). Structured interviews are another distinct form of interviewing but are often incorporated as part of quantitative research with a focus on maintaining reliability and validity of measurement concepts (Bryman, 2012). In-depth or unstructured interviews are one of the most frequently adopted qualitative interview methods which combine structure with flexibility (Legard et al., 2003). The researcher will often have a list of prompts or reminders to attend to specific issues during the interview but the interviewee is encouraged to respond without restraint. The interviewer might only pose one main question to the interviewee but will choose to then follow-up it up with a series of probes in response to certain issues raised during the interview of particular interest (Bryman, 2012). In-depth interview are often defined as being akin to a form of conversation with the aim of generating knowledge in a naturalistic way (Legard et al., 2003).

In contrast, semi-structured interviews allow the interviewer to construct a list of initial questions in relation to original research objectives, but also flexibility with regards to how the participant chooses to react to particular questions (Bryman, 2012). Being attentive to what the interviewee speaks about, the researcher does not always follow the order outlined in the interview guide and can alter the way in which some questions are phrased. Semi-structured interviews allow the interviewer to probe for further information emerging during the interview process, whilst also enabling the participant to introduce unanticipated themes. However, generally all of the questions will be covered using similar wording from one interviewee to

another (Bryman, 2012). Semi-structured interviews offer the interviewer more structure than in-depth interviews and are more useful if the researcher has already identified some specific issues or topics of interest which they wish to focus on during the interview. However, both distinct forms of qualitative interviewing are similar as neither approach requires for the researcher to rigidly adhere to the interview guide as is the case when conducting quantitative research interviews (Bryman, 2012).

Because I wanted to gain access to the men's perspectives and interpretations of the meaning of objective feedback in their own worlds, and whether this appeared to be important in their motivations and levels of success in achieving behaviour changes as a result of taking part in FFIT, qualitative interviews seemed the most suitable method of inductively generating data for this study. Following inductive analysis this approach would then enable me to further interpret my findings deductively drawing on individual theories of health behaviour change and wider sociological understandings of masculinities and health.

Reflexivity has been recognised as a defining aspect of qualitative research contributing to greater understanding of the phenomena under investigation (Finlay and Gough, 2003). Being reflexive refers to the researcher's assimilation of information into the research context in an attempt to make clear the ways in which their own particular thoughts, feelings and attitudes may impact upon each stage of the research (Finlay and Gough, 2003). The traditional positivist quantitative paradigm emphasises the importance of reducing potential researcher interference and maintaining control over particular variables. However, within qualitative research, the presence of the researcher is viewed as being inevitable and thus should be utilised as a valuable resource as part of the research process (Holliday, 2007). The qualitative researcher does not 'pretend' to evade subjectivity and must therefore account for that subjectivity whenever possible (Holliday, 2007). The process offers a 'reflexive methodology' for understanding and accounting for the ways in which the researcher's presence might alter the culture under investigation. Moreover, reflexivity enables the researcher to methodically exploit what is exposed

about the culture throughout this process (Holliday, 2007). As such, reflexivity offers a challenge to the conventions of traditional positivist models of science which advocate distance and objectivity above engagement and subjectivity. Therefore, during the current investigation it was important to recognise my own contributions to the research context, data collection and analysis of findings.

3.4 Research methods

As described earlier (see Chapter 1, p. 12), this PhD thesis draws on qualitative data gathered through one-to-one interviews with men who had taken part in the FFIT programme in ‘non-trial’ deliveries of FFIT commencing in February 2012. In this section I will discuss the research methods adopted in this study. I will describe the research procedures, ethical approval, the sample, recruitment, materials, topic guide development, data generation, data management and analysis.

3.4.1 The research context: identifying participants

The full recruitment and randomisation procedures pertaining to the FFIT RCT are detailed elsewhere (Hunt et al., 2014b, Wyke et al., 2015). In brief, men were recruited from all 12 clubs within the SPL in the 2011-2012 season, and additionally in Hamilton Academicals (who had been in the SPL during 2010-2011 and taken part in pilot deliveries of FFIT but had been demoted into another league for the 2011-2012 football season). The trial required that baseline measurements were taken in all 13 clubs in August-September 2011, prior to the intervention group undertaking FFIT immediately (commencing FFIT within 2-3 weeks of baseline measurement at each club).

The recruitment strategy was multifarious and focused mainly around club-based strategies, including advertisements through various channels; SPL club and fan websites as well as within club stadia (e.g. posters/flyers and advocacy from football club celebrities), collaboration with local supporters’ clubs and advertisements within club and Scottish Football Association e-newsletters. Moreover, fieldworkers

approached potentially suitable men on match days to ascertain if they would be interested in registering an interest in the programme. Media coverage was also utilised to promote awareness of the programme via local and national newspapers as well as a video blog recorded by a British Broadcasting Corporation (BBC) Scotland sports presenter, a BBC Radio Scotland documentary and interviews with researchers and participants from the FFIT feasibility study, aired on Scottish Television and Radio Scotland. Additional recruitment strategies included emails to staff via local employers and word of mouth. Men were invited to contact the research team via SMS text, email or telephone to register their interest along with their self-reported weight, waist measurement, height and date of birth. Some men were also approached about FFIT at the stadia during pre-season matches. Those who showed an interest on match days were followed up with a telephone call from a member of the research team.

All men whose self-reported BMI (i.e. at least 28kg/m^2) and age (i.e. 35-65 years in 2011-12) indicated they were eligible for the study were invited along to participating club grounds for formal eligibility assessment (Hunt et al., 2014a, Wyke et al., 2015). Participants randomly allocated to the delivery of the programme in August to December 2011 formed the intervention group, whereas participants randomly allocated to the August to December 2012 delivery constituted the waitlist comparison group. Men in the waiting list comparison group took part in the programme following completion of the 12-month trial outcomes. Randomisation was on an individual basis within club, and 748 men were randomised to the intervention and waitlist comparison group (Hunt et al., 2014a, Wyke et al., 2015). In total 306 men were offered a place on the February-April 2012 delivery. The February 2012 delivery of FFIT provided a unique opportunity to explore the research aims and objectives outlined in the current PhD study. All of the men who took part in the current study were sampled from the 306 men who were offered a place on the 'non-trial' deliveries of FFIT which took place at 12 SPL football clubs, between February-April 2012.

3.4.2 Objective physical measurements

All participants in the 'February 2012' delivery of FFIT undertook a suite of objective measurements immediately before commencing the FFIT programme in January/February 2012 ('baseline') and 12-weeks later (post-programme measures). All of the objective physical measurements were conducted by fieldwork staff trained to standard protocols, as used in the FFIT RCT (Hunt et al., 2014a, Hunt et al., 2014b). Weight in kilograms (kg) was assessed with an electronic scale (Tanita HD 352). The men wore light clothing and were requested to remove footwear and empty their pockets prior to measurement. Height in metres (m) was recorded using a portable stadiometer (Seca Leicester) also without footwear. Waist circumference was measured with a 200 centimetre (cm) measuring tape. At least two measurements were taken; a third measurement was made if the first two measurements varied by ≥ 5 millimetres (mm). The mean was calculated from all of the waist circumference measurements. Resting blood pressure was recorded with a digital blood pressure monitor (Omron HEM-705CP) which was calibrated before fieldwork commenced. The fieldworkers were issued with Body Mass Index (BMI) wheels to use as a tool to demonstrate visibly to the men whether their BMI fell within the normal, overweight or obese range, using conventional cut-offs. Information on each of the men's objective physical measurements was provided to the men by the fieldwork staff at the baseline measurement sessions (pre-programme) performed at each of the clubs.

As part of this extension of research on FFIT, a sub-sample of men (n=63) taking part in the February 2012 delivery from four of the 12 football clubs, were offered the opportunity to wear a device known as an activPAL3™ Professional Physical Activity Logger (PAL Technologies Ltd, Glasgow, Scotland). They were informed that the device would be worn for up to one week at the start of the programme, and again at the end of the 12-week component of the FFIT programme. The men were told that wearing the activPAL3™ would enable them to get an objective and accurate measure of their physical activity and sedentary time.

An activPAL3™ is a small, lightweight, electronic device, worn unobtrusively on the middle of the thigh between the hip and the knee. The activPAL3™ contains a uni-axial accelerometer and motion sensing technology (Intelligent Activity Classification) to identify and quantify three classes of free-living activity: time spent sitting/lying; standing; and stepping. The activPAL3™ also quantifies the number of steps performed during bouts of walking, intensity of steps taken (cadence) and estimates of energy expenditure (Lord et al., 2011). The activPAL3™ is able to distinguish between different postures (seated, lying, standing and walking) and therefore able to provide a clear indication of participants' movements throughout the day and the extent of their sedentary behaviour. Several validation studies of the activPAL3™ have showed the posture classification of the inclinometer function to be accurate and it is widely regarded as a gold-standard measurement for sedentary time (e.g. (Grant et al., 2006, Godfrey et al., 2007). The data are recorded by the activPAL3™ in 15-second epochs and the output can quickly be downloaded onto a laptop or Personal Computer (PC) via a USB interface. The device has a battery life of approximately nine days and can be continuously worn throughout this time for 24 hour monitoring. It is usually affixed directly to the skin on the leg with protective covering which allows it to remain in place during showering; it need only be removed to prevent the device being immersed in water during swimming or bathing. Previous research has found the activPAL™ to be acceptable to participants in community-based studies (Grant et al., 2008).

The activPAL3™ is currently marketed as a professional research tool for objectively measuring PA and sedentary behaviour. The device is also capable of providing objective feedback on one's activity patterns over the period of time that the monitor is worn. However, the utility of this feedback as an individually personalised motivational or educational tool is not currently understood. The February 2012 deliveries of FFIT thus provided an ideal opportunity to investigate the value of the device in this capacity.

3.4.3 Research procedures

Prior to attending baseline measurement sessions, all men who were allocated to the February 2012 delivery of FFIT at each of the four clubs, were sent a letter outlining the proposed additional research concerning objective measures of PA and functioning (Appendix 1). This provided the men adequate time to consider whether or not they wished to take part in these additional procedures before attending the measurement sessions. At baseline, participants from these four clubs were asked if they had received the information letter and were given an additional copy of the study information to read (Appendix 2). Participants were asked if they would be willing to wear an activPAL3™ for up to one week at the beginning of the programme so that the device could be retrieved when they attended their first programme session the following week (i.e. week 1 of the FFIT programme). They were also asked at this stage if they would be willing to wear the activPAL3™ again between week 11 and week 12 of the FFIT programme. For those who agreed to wear the device at week 11, the activPAL3™ was worn for a further week and collected at week 12, the final week of the 12-week component of the FFIT programme.

Prior to calibration, each activPAL3™ monitor was charged via the PALdock charging Station connected to a host PC via a USB interface. The full activPAL3™ protocol is provided (Appendix 9). The LED light on the front of each of the activPAL3™ monitors displayed a green light to indicate when the battery was fully charged and the device was ready for use. Once fully charged the activPAL3™ monitors were calibrated and set-up to record using activPAL™ analysis software (Version 5.9.1.1). Once calibrated each of the activPAL3™ monitors had to be fully prepared and waterproofed. A picture of the activPAL3™ monitor prior to waterproofing is displayed in Figure 2.



Figure 2 activPAL3™ monitor

First, several 10cm X 13cm strips of waterproof medical grade adhesive (Hypafix Hypoallergenic Dressing Retention tape) were cut using scissors. Next, each individual activPAL3™ monitor was placed inside a waterproof nitrile sleeve and then wrapped in a single layer of the waterproof adhesive dressing (Figure 3).



Figure 3 activPAL3™ monitor with waterproof covering

One single piece of these strips was used to waterproof each device. Each activPAL3™ monitor was assigned with a participant identification number that corresponded to each of the men taking part in FFIT at the four clubs and was logged in a spreadsheet. The activPAL3™ identification number was also recorded alongside each participant

identification number. An arrow indicating 'up' was drawn on the front of each device once prepared to ensure the device remained in an upright position. At each of the four clubs, the men gave fully informed written consent after they were fully briefed on the purpose of the activPAL3™, given a demonstration on how to wear the device and provided with an information sheet. The device was affixed to their leg with a single piece of the 10cm X 13cm strips of Hypafix waterproof transparent dressing, following standardised procedures to protect men's privacy (Appendix 9), at the end of the measurement session. Men were given additional Hypafix adhesive pads to re-affix the device in case they needed to remove it at any stage during the week (e.g. bathing or showering). The following week (i.e. week one of the programme) each of the men had their activPAL3™ removed and were offered feedback on their activity patterns. All of the 63 participants who agreed to wear the activPAL3™ at the beginning of the FFIT programme were provided with visual feedback on their objectively monitored activity levels at baseline (Appendix 5). The feedback profiles generated for each the men were anonymised with their individual participant identification numbers and were presented with laminated versions during the second week of the programme. I personally handed each activity profile to the men at the beginning of the first week of the programme (i.e. the week following the initial baseline measurements), within the context of the group session and explained to the men what the feedback meant.

From the 63 men who agreed to wear the activPAL3™, 37 men agreed to wear the device again towards the end of the 12-week programme (Table 1). This reflects a considerable drop-off and could have resulted due to several different reasons which are discussed later in this thesis. These men wore the device between week 11 and week 12 of the programme. Each of the 37 men who agreed to wear the activPAL3™ monitor at both time points (i.e. both the beginning and the end of the programme) were offered a personalised feedback letter post-programme to illustrate how their objectively measured activity patterns had changed over the course of the 12-week programme (Appendix 4). The feedback letter was designed to be as clear and easily understandable as possible, utilising simple language and diagrams. The information

provided in the letter included: the men's activity levels before (Appendix 5) and after (Appendix 6) the programme; the amount of weight loss achieved (in both metric and imperial measures); and waist measurements (in both centimetres and inches). Differences in the men's activity and weight-related metrics between the beginning and the end of the programme were clearly illustrated in bullet point summaries and tables. The feedback on changes in their activity patterns was designed to be straightforward for the men to interpret. Information pertaining to current recommendations of steps per day, indicative of typically sedentary and active lifestyles, was used as a guide for comparing their current levels of activity (Tudor-Locke et al., 2011). Summaries of the men's activity patterns from the activPAL3™ monitor were given in the latter part of the feedback letter providing them each with personalised data on their activity patterns at the beginning and end of the 12-week programme. Caution was taken when devising the content and wording of the feedback letter to ensure that comment was not explicitly made on whether or not they had been successful in losing weight or altering their activity levels. Therefore, neutral language was used throughout the letter where possible. The letters were posted to the men three to six weeks after they had completed their 12-week objective measurements.

Table 1 Objective monitoring of men's activity patterns at the four clubs

Club ID	Number of men sent the participant Letter	Number of men fitted with activPAL3™ at baseline measurement sessions	Number of men fitted with activPAL3™ at week-11 and wore the device at baseline	Number of men who wore the activPAL3™ at the 12-week programme
01	24	16	11	9
02	30	19	13	13
03	21	14	8	8
04	19	14	12	7
Total	94	63	44	37

3.4.4 Sampling and recruitment for the qualitative interviews

For this study I used purposive sampling to gain perspectives from men attending the FFIT programme at the four clubs where objectively measured feedback on activity levels was offered. The specific purpose was to understand the *meanings* that different forms objective feedback have for overweight and obese men part in FFIT, and to explore whether these meanings varied between men who achieved and did not achieve their 5% weight loss target. Therefore, I sampled to achieve roughly equal numbers of men who had and had not lost 5% or more of their baseline weight during their participation in the 12-week programme (Table 2). The threshold of 5% weight loss was selected as a marker of successful maintenance due to the significant health benefits associated with achieving a 5% reduction in body weight (National Institute for Health and Clinical Excellence, 2006, Scottish Intercollegiate Guidelines Network, 2010). Men were made aware at the beginning of the programme what a 5% weight loss target would be for them.

Table 2 Sampling frame for the qualitative interviews

	Achieved 5% weight loss (at 12-weeks)	Did not achieve 5% weight loss (at 12-weeks)	Total
Received personalised visual feedback on activity levels	14	14	28

After the 12-week programme had ceased, 34 of the 37 men (who had worn the activPAL3™ at the beginning and end of the programme and received post-programme feedback), were contacted and asked if they would be willing to take part in some additional research about the FFIT programme (see Figure 4, p. 86). The men were each offered a club-based token (i.e. £20 club shop vouchers) to thank them for their contribution.

3.4.5 Characteristics of the sample

Participant baseline characteristics of the interview participants are provided below (n=28, see Table 3, p. 87). At baseline, the mean age of participants was 46.07 (sd 8.09). Mean body weight was 111.65kg (sd 8.09), mean BMI was 35.38 (sd 5.44) and mean waist circumference was 118.25 (sd 12.54). Five men were classed as 'overweight', nine as 'mildly obese', seven as 'moderately obese' and seven men as 'extremely obese' (BMI >40). Mean systolic blood pressure was 142.63 (16.96) mm Hg and mean diastolic pressure was 89.45 (9.26) mm Hg. Individual participant characteristics (e.g. age, pseudonym used to protect their identities, marital status, BMI [at baseline] and percentage of weight loss at the end of the 12-week programme) are provided in Table 4, pp. 88-89.

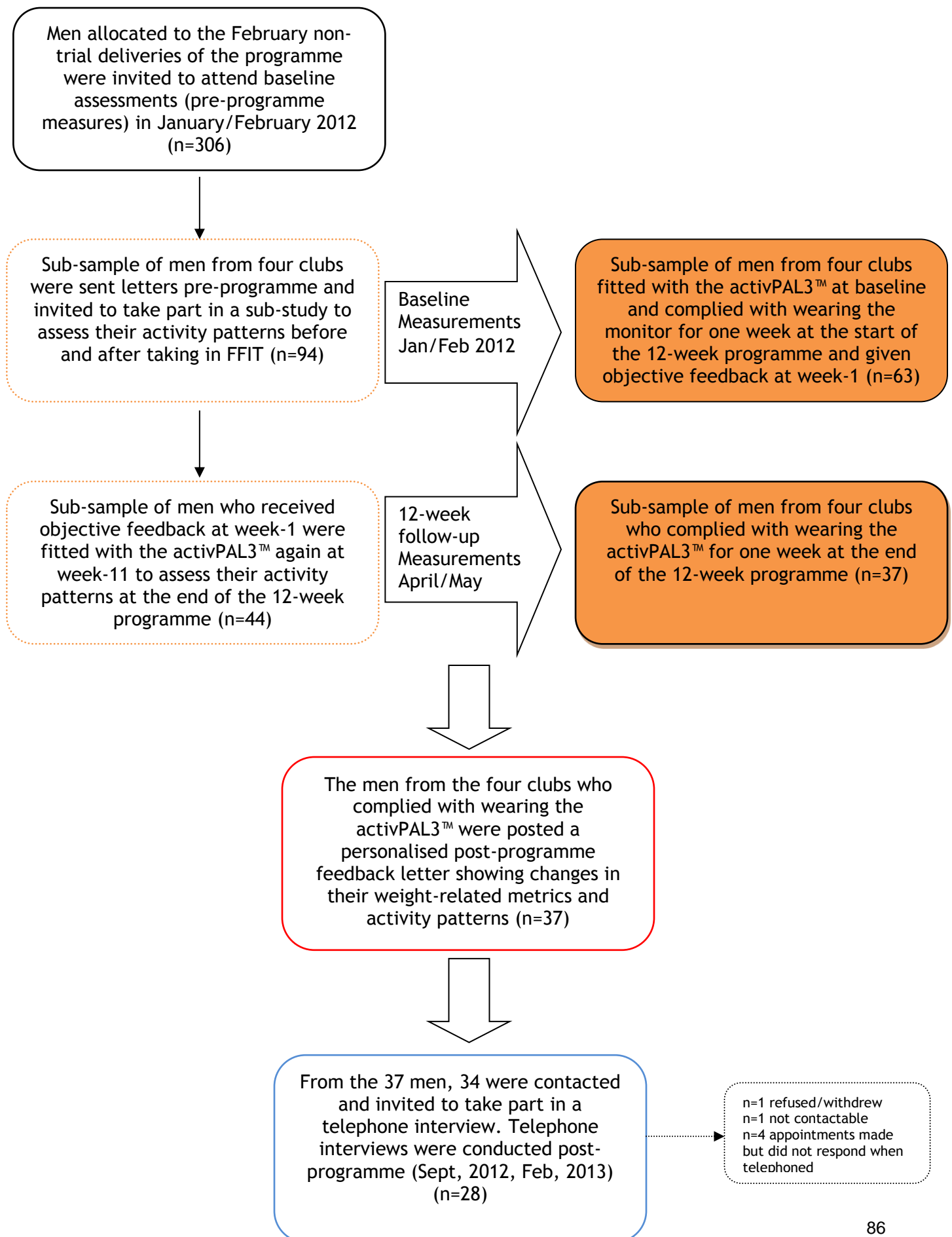


Figure 4 Timeline and participant flow

Table 3 Baseline sample characteristics

(n=28)	n or mean (sd)
Mean age	46.07 (8.09)
Objective physical measures	
Mean weight (sd) (kg)	111.65 (16.46)
Mean BMI (sd) (kg/m ²)	35.38 (5.44)
BMI category	
Overweight (BMI 28-29.99)	5
Clinically obese	
I - 'Mild' obesity (BMI 30-34.99)	9
II - 'Moderate' obesity (BMI 35-39.99)	7
III - 'Extreme' obesity (BMI >40)	7
Mean systolic blood pressure (mmHg)	142.63 (16.96)
Mean diastolic blood pressure (mmHg)	89.45 (9.26)
Mean waist (sd) (cms)	118.25 (12.54)
Mean height (sd) (cms)	177.79 (6.33)

Table 4 Individual participant classifications and pseudonyms

Club ID	Pseudonym	Age	Marital status	Occupation	SIMD	BMI (Baseline)	BMI Category	5% weight loss (12-weeks)	Percentage of weight loss (12-weeks)
01	Frank	49	Married	Nurse Manager	1	35.70	Obesity II	Yes	9.67
01	Calum	38	Divorced	Cleaner	1	39.67	Obesity II	Yes	5.17
01	Michael	55	Married	Nurse Manager	2	27.05	Overweight	Yes	7.58
01	Alex	42	Cohabiting	Security Guard	1	41.91	Obesity III	Yes	5.94
01	Steven	33	Married	Operations Manager	4	36.92	Obesity II	Yes	5.43
02	Thomas	37	Separated	IT Consultant	3	29.14	Overweight	No	1.65
02	Gary	50	Married	Bank Manager	5	32.00	Obesity I	No	4.32
02	Jamie	36	Married	Driver/Courier	3	31.31	Obesity I	Yes	6.07
02	Kevin	47	Cohabiting	Financial Consultant	3	32.02	Obesity I	No	n/a ^b
02	Andrew	41	Married	Storeman	1	36.52	Obesity II	No	3.82
02	Martin	34	Married	Forklift Truck Driver	2	42.77	Obesity III	Yes	10.31
02	Ross	52	Married	Supervisor Local Council	2	38.40	Obesity II	No	1.92
02	Alan	44	Single	Business Support	5	31.31	Obesity I	No	2.06
02	Dan	58	Married	Taxi Driver	5	26.61	Overweight	No	n/a ^b
02	Tim	33	Cohabiting	Policy Manager	5	31.70	Obesity I	Yes	6.86
02	Chris	58	Married	Administration Manager	5	28.45	Overweight	Yes	8.8
03	Matthew	47	Married	Missing ^a	3	40.40	Obesity III	Missing ^a	Missing ^a
03	George	56	Married	Missing ^a	5	35.24	Obesity II	Missing ^a	Missing ^a
03	Ryan	54	Married	Shop Assistant	4	42.39	Obesity III	Yes	11.52
03	Billy	52	Married	College Lecturer	5	38.94	Obesity II	Yes	7.5
03	Jonathan	47	Married	Machine Engineer	2	42.98	Obesity III	Yes	15.99
04	David	49	Separated	Railway Supervisor	3	29.13	Overweight	Yes	5.74
04	Gordon	40	Divorced	Barperson	1	34.58	Obesity I	No	1.87

04	Ben	36	Separated	IT Chief Engineer	3	34.44	Obesity I	No	n/a ^b
04	James	42	Cohabiting	Social Worker	2	30.50	Obesity I	No	3.5
04	Donald	49	Married	Local Authority Worker	2	45.99	Obesity III	No	n/a ^b
04	Jeffrey	53	Cohabiting	Day Centre Officer	2	33.06	Obesity I	Yes	9.78
04	Grant	58	Married	Contracts Manager	1	42.01	Obesity III	No	2.09

^aMissing: data missing, ^bn/a (non-applicable): did not achieve weight loss, SIMD: Indicator of level of affluence/deprivation of areas of residence using Scottish Index of Multiple Deprivation (Quintiles), 5=lowest quintile of deprivation

3.5 Data Generation

In the next section I will discuss my rationale for adopting qualitative semi-structured interviews as the primary method of generating data within this study.

3.5.1 Rationale for semi-structured telephone interviews

I decided that semi-structured telephone interviews would give me access to the men's experiences and generate substantive data that would enable me to address my research objectives, whilst avoiding large additional costs in time and travel to visit men in their own homes. Whilst in some circumstances semi-structured interviews conducted over the telephone may not allow the establishment of rapport between the researcher and the interviewee, they were an ideal means of data collection in this study for several reasons. First, I had had the opportunity to meet with each man prior to the interviews during the baseline measurement sessions when I had personally met with them, explained my research aims and methods, and affixed their activPAL3™ device. This enabled me to establish a personal connection and rapport with each of the men. Secondly, the data collection had to be conducted within a relatively brief time frame following the men's receipt of the feedback letters. This ensured that reception and interpretation of this information could easily be recalled. As the men were recruited from different locations in Scotland, travel to each man's home to conduct interviews would have severely limited the capacity to conduct the fieldwork in a timely manner. Thirdly, telephone interviews allow considerable savings in time and resources, including the costs of travel in time and monetary terms. Thus, we were confident that semi-structured telephone interviews would enable an inductive approach to data collection by allowing the collection of participants' narratives of their unique experiences in response to particular questions posed by the interviewer. Our confidence in making this judgement was underpinned by past experience in an analogous context, as in the previous year colleagues had demonstrated that semi-structured telephone interviews were successful in accessing the experiences of pedometer use amongst men who had taken part in an earlier (pilot) delivery of FFIT (Hunt et al., 2013). Indeed, there are some indications in the literature that some interviewees may even prefer a more anonymous encounter when discussing

particularly sensitive topics, particularly in relation to health matters (Irvine et al., 2010).

3.5.2 Conducting the interviews

I conducted all of the semi-structured telephone interviews within the MRC/CSO Social and Public Health Sciences Unit (SPHSU), University of Glasgow. During each of the interviews I was seated in a quiet and private room to facilitate optimal data collection, concentration and confidentiality, and to allow the interview to proceed with no distractions or audible disturbance at my end of the call. This was also important in trying to create optimal conditions for recording the interview. Participants were encouraged to receive the call in a setting that allowed them to speak freely and without distraction. Each of the interviews was recorded electronically over the telephone directly onto an internal server to optimise quality of the digital interviews and to ensure security. Consent was audio-recorded for each of the telephone interviews. The interviews were conducted at a time that was most suitable for each of the men and therefore the majority of interviews were conducted in the evenings or at the weekend. The duration of the interviews varied considerably in length between approximately 40 and 120 minutes, with the majority of interviews lasting between 60 and 90 minutes. All of the interviews were conducted between September, 2012 and February, 2013. The interview guide was used during each of the interviews to ensure that similar questions were addressed during each interview, focusing on issues consistent with my research aims. However, the interview schedule served only as a general guide and the men often discussed other issues that were not covered in the guide.

The interview topic included open-ended questions in relation to men's responses to being measured and experiences of objective feedback during the FFIT programme (the topic guide can be seen in Appendix 7). For example, it included questions on initial experiences of receiving feedback, what it was like having measurements done and hearing the results and the impact of receiving the information on their attitudes and motivation to change behaviour.

3.6 Data management and analysis

3.6.1 Transcription and data storage

After each telephone interview a copy of the digital recording was sent to an independent, approved, transcription company via a secure file sharing system for transcription. The interviews were transcribed verbatim and returned by secure links. I then checked each of the transcripts against the original digital recordings for accuracy. Amendments or changes were implemented where necessary. Despite this being a time consuming endeavour, I felt this was an important investment, not just to assure the validity of the data, but also as a first stage in familiarising myself with the data. After I had checked each interview transcript for accuracy, I ensured that any identifying information (e.g. men's names and the football club where they attended the FFIT programme) was anonymised. The men were given pseudonyms and each of the football clubs was allocated an identification number. Each of the interview transcripts was saved in Microsoft Word and imported into NVivo qualitative data analysis software (QSR International Pty Ltd. Version 10, 2015) to facilitate the data storage and retrieval. My analysis began as soon as I had access to the transcripts which were printed off immediately and re-read several times to fully familiarise myself with the generated data. Each of these hard copies of the interviews was stored in a locked cabinet in the MRC/CSO SPHSU, University of Glasgow.

3.6.2 Data analysis

The qualitative data generated were analysed thematically (Braun and Clarke, 2006) utilising the principles of framework analysis (Ritchie and Lewis, 2003, Ritchie and Spencer, 1994). The framework approach starts deductively from the aims and objectives of the study, with the overall findings being grounded and inductive in the original accounts of those studied (Pope et al., 2000a). This procedure enables scientific rigour to be maintained due to the systematic nature of this approach (Mays and Pope, 1995).

The framework method was originally developed by researchers, Jane Ritchie and Liz Spencer, based at the National Centre for Social Research in the United Kingdom for use in applied policy research (Ritchie and Spencer, 1994). Since its inception the framework approach has become an increasingly popular method for the analysis and management of qualitative data across several domains, particularly qualitative health research (Gale et al., 2013). In contrast to several other approaches to qualitative data analysis, the framework approach is not positioned alongside a specific epistemological, theoretical or philosophical approach. Framework thus offers a flexible tool for qualitative researchers to identify commonalities and differences in qualitative data to generate themes.

The framework approach has been most frequently adopted for the thematic analysis of data generated via semi-structured interviews. However, framework can also possibly accommodate other forms of textual data, such as diaries or observation field notes (Gale et al., 2013). The term 'framework' originates from the 'thematic framework' which is the defining feature of the method (Ritchie and Lewis, 2003). The main facet of framework involves the matrix output, whereby rows (cases), columns (codes) and 'cells' of summarised or synthesised data provide researchers with a rigorous methodical approach for the management and analysis of qualitative data (Gale et al., 2013).

There are five main stages of framework analysis; familiarisation, identifying a thematic framework, indexing, charting, and mapping and interpretation (Ritchie and Spencer, 1994). In the next section I describe how I followed each of these stages in analysis of the data collected (Ritchie and Lewis, 2003, Ritchie and Spencer, 1994).

In accordance with this approach, I read each of the interview transcripts repeatedly, identified key themes, indexed, charted systematically and then organised into matrices (Ritchie and Lewis, 2003). To add rigour to these processes, selected transcripts were also read by my supervisors to allow detailed discussion of the data and the approaches and stages of analysis. First, I read over each of the interview transcripts several times prior to formal analysis. During this process of familiarisation, I noted down initial thoughts, mainly focusing on what participants said about using different kinds of

objective feedback during the programme. At this stage of my analysis I worked from both electronic and paper copies of the interview transcripts. I initially coded to very broad headings about each aspect in relation to: what men said about being told their objective measurements at baseline (before taking part in the 12-week part of the programme); what they said about the various objectively measured feedback they got during the programme (such as the pedometer); what they said about objectively measured feedback at the end of the programme (such as the post-programme feedback).

During this phase I began to use NVivo to facilitate the coding and data management process (Appendix 11). NVivo software enabled me to code sections of data thematically while also simultaneously retaining access to each of the full interview transcripts electronically. Once I had further sub-divided the content coded to main distinct headings all of the descriptive content coded to each of these themes was charted and summarised into framework matrices (Appendix 10), consistent with the framework approach. During this stage of thematic charting I created framework matrices for each broad theme using Microsoft Excel (2007), whereby each participant was assigned a row and each theme presented in a column (Ritchie and Lewis, 2003). Consistent with the framework method, I summarised the main points in relation to each piece of data. In some cases raw data and/or direct quotations were included in the matrix in order to retain sufficient context. I also entered notes and summaries in each of the frameworks.

I worked closely between the original transcripts and the frameworks to ensure that rigour was maintained and data not omitted during this phase of analysis. This process enabled me to inspect each piece of data and identify consistencies across the data as well as atypical cases that were not consistent with other men's accounts. According to (Ritchie and Lewis, 2003) the analysis of qualitative data is not linear but rather is an iterative process that involves constant movement up and down the data. In line with this approach I was able to visually interrogate data across each of the frameworks as well as referring back to the original transcripts. Thus, consistent with the 'mapping and interpretation' phase of the analytical process, I was able to interpret the data

and relate the findings to wider theoretical explanations in order to address the research questions.

At a later stage of my analysis I incorporated aspects of the 'One Sheet of Paper' (OSOP) method for sub-group analysis (Ziebland and McPherson, 2006). The OSOP method of analysis entails close inspection of data pertaining to coded data for each broad theme, and recording under distinct headings all examples of issues arising in the data, while also noting respondent details next to each extract. This approach enables rigorous comparison of data from different groups or respondents to identify anticipated and unanticipated themes as well as 'deviant cases'.

In accordance with the Consolidated Criteria for Reporting Qualitative Studies (COREQ), a published formal framework for conducting qualitative research, it is important to stipulate methods of researcher triangulation as this provides a deeper and more nuanced understating of the phenomenon (Tong et al., 2007). As mentioned above, I discussed every aspect of the analytical process with my supervisors in considerable detail, both of whom have extensive experience of conducting qualitative research, enhancing the rigour and trustworthiness of my analysis and findings.

Another important criterion specified as part of the 32-item COREQ checklist is the process of member checking. It is suggested that acquiring feedback from participants on research findings may enhance the validity of the researcher's explanations by confirming that their accounts or insights are not diminished by the researcher's own viewpoint or stance (Tong et al., 2007). Thus member checking has a dual function: from a methodological perspective, by potentially reducing inaccurate representations of interviewees' accounts; and from an ethical perspective, by empowering participants via active involvement and participation in the research process (Goldblatt et al., 2011). It is also suggested that member checking may hold additional benefits for some participants. Harper and Cole (2012) state that member checking might provide an opportunity for participants to offload suppressed feelings or emotions. Moreover, they suggest that for some people member checking may yield similar effects as group therapy, which occur as a consequence of participants being

able to read their own perspectives as well as the accounts of others. These authors argue that although participants might not actually meet other participants face-to-face as part of a group, they may experience some positive benefits by reading the accounts of other people who have encountered an analogous problem or event (Harper and Cole, 2012).

Some people have suggested that member checking also could have the potential to inflict unanticipated harm or stress (Harper and Cole, 2012), particularly with regards to health research (Goldblatt et al., 2011). For example, Harper and Cole (2012) suggest that, for some, reading their own accounts and/or the accounts of others, could have the capacity to provoke emotional responses and recollection of adverse memories or experiences. Within the context of the current study, I interviewed men who were both successful and unsuccessful in achieving weight loss after taking part in a weight management programme. For some men, negative emotions emerged during the interviews and were often suffused with issues around body image and prior experiences of being overweight or obese. Therefore, providing men with access to their own personal accounts in combination with the experiences of other overweight and/or obese men may invoke negative emotions, particularly among men who perceived themselves as being unsuccessful in making lifestyle changes during the programme and/or had low feelings of self-worth and/or self-esteem.

3.6.3 Reflexivity and my position as a researcher

Researcher reflexivity pertains to eight items out of the 32-item COREQ checklist (Tong et al., 2007). Oliffe and Mroz's (2005) published recommendations on interviewing men about health and illness also emphasise the important role of reflexivity as a means of confronting researcher subjectivity, particularly in the post interview period. As discussed above (section 3.3), it is therefore important for me to reflect upon how my own position as a researcher impacted upon data collection in relation to this study.

As described above (section 3.5.1), I had previously met each man during pre-programme measurement sessions, and hence had established a personal connection that was vital in building rapport with each man before conducting the telephone interviews. During the interviews I found that overall the men

were receptive and open to the all of the questions covered in the topic guide. My prior experience of carrying out qualitative research interviews within the context of healthcare market research, often with vulnerable participant groups, was invaluable in this context as it enabled me to conduct the interviews confidently while also maintaining empathy and understanding of the men's unique experiences.

Oliffe and Mroz (2005) assert that a non-threatening, casual, punctual and highly organized interviewer plays a crucial role in facilitating an environment in which men can express themselves openly without disruption. The men were able to participate in the interviews over the telephone in a non-threatening environment, predominantly from the comfort of their own homes. During the interview process I consciously portrayed myself as being courteous, organised and professional while simultaneously deemphasising my role as interviewer by adopting a casual demeanour to encourage the men to speak freely and openly about their own experiences.

It is important to reflect upon the ways in which my own personal characteristics may have influenced the processes of data generation. I am a white, heterosexual male from a middle class background, with a slim to medium build. When conducting these interviews I was in my late twenties and therefore considerably younger than nearly all of the men in the study. The men were aware of my status as a PhD research student having already met me face-to-face during the baseline measurement assessments. At the beginning of the interviews I introduced myself again and confirmed that each of the men had received and read over the participant information sheet (Appendix 2) and completed the informed consent to participate in the study (Appendix 3). According to Oliffe and Mroz (2005) it is important that lay experience is prioritised during qualitative studies, and interactions whereby one individual asks questions and another person provides answers can lead to participant passivity and unequal status. Despite recent completion of my MSc in health psychology prior to commencing my PhD and having a specific interest in behaviour change, I clearly positioned myself as a student researcher in order to appear as a 'non expert' whilst conducting the interviews. I remained cautious not to provide too much information if the men asked for my own insight on

matters relating to weight management, PA, diet or the FFIT programme, and instead encouraged them to discuss and reflect on their own experiences. However, in some cases I felt that it was important to provide greater empathy and assurance as some men appeared defeatist and/or used self-denigrating language during their interviews.

Being a male researcher may have enabled me to gain deeper access to the men's experiences and perhaps explains why some were particularly open to talking about emotional or personal matters relating to weight and/or body image. Nevertheless, it is important for me to acknowledge that having never personally experienced being obese myself it may have been difficult for the men to relate to me personally. During one of the interviews I perceived some hostility in this man's reactions to some of the questions and he perhaps felt I was inferring judgement in some way and/or perceived the interview as a means of venting some of his own frustrations in relation to his own experiences of weight management. I managed this encounter by continuing the interview in a calm, understanding and empathetic manner while at the same time remaining cognisant of how I phrased my questions during the remainder of the interview as well as any other issues the participant may have perceived as offensive.

3.6.4 Ethics

Ethical approval was sought from the University of Glasgow, College of Social Sciences Research Ethics Committee for non-clinical research involving human subjects which complies with the UK Economic and Social Research Council's Framework for Research Ethics. The initial ethics application was submitted in January 2012 as part of an extension to the evaluation (including an RCT and process evaluation) of FFIT which had already been funded and granted full ethical approval on the 18th May 2011. The additional work described here provided an opportunity to further our understanding of men's participation in FFIT and to address issues which could not be addressed in the main evaluation of FFIT. In July 2012 an additional ethics amendment was submitted outlining additional proposed qualitative research aims and objectives. Ethical approval for this stage of the research was granted on the 17th August 2012 (CSS201020106).

3.7 Summary

In this chapter I have provided detailed discussion of the research methods and procedures employed throughout this PhD study. I have focused on how my choice qualitative methods enabled me to access men's experiences and generate substantive data to address my research aims. The following three chapters examine three areas pertaining to my overarching research questions examining: men's reactions to getting objective feedback on their health risk indicators prior to taking part in FFIT; men's experiences of using the pedometer feedback as a motivational tool both during and after the 12-week programme; and men's responses to receiving personalised feedback on changes in their objective PA levels post-programme. Furthermore, I will explore whether there are differences in the accounts of men who did and did not achieve their 5% weight loss target. The analysis of these qualitative data draws on understandings of masculinities and weight/weight loss and SDT.

4 Chapter four: ‘The BMI hit a lot of people on the course because it’s no’ something you get done all the time’: men’s reactions to receiving objective feedback on their health risk indicators

4.1 Introduction

The aim of the analysis presented in this chapter was to explore men’s experiences of receiving feedback on their objectively measured health risk indicators before starting the February 2012 delivery of the Football Fans in Training (FFIT) programme. The chapter describes: first, what men said they anticipated before going along to the initial measurement session at football stadia; second, their experiences of attending this measurement; third, their reactions to receiving immediate feedback on their objectively measured health risk indicators; and fourth, what men said about how receiving such information affected subsequent behaviour and in particular how accounts differed depending on whether men had achieved or not their 5% weight loss target.

While attending the baseline measurement sessions men underwent a battery of objective physical measurements including: body weight, height, waist circumference, BMI, blood pressure (systolic and diastolic) and respiratory function. During the interviews the men spoke mostly about their weight-related (i.e. weight, waist and BMI) and blood pressure measurements. These measurements are therefore the ones which are referred to throughout this chapter.

4.2 Men’s anticipation of being measured prior to taking part in FFIT

Some of the men, but by no means all, explicitly expressed feeling very apprehensive about going to the initial measurement session to get their objective physical measurements prior to taking part in the FFIT programme. A few men also used language which suggested the decision to come along and be measured was difficult. For example, Michael (age 55, BMI: overweight) said “I forced myself to go to the programme and actually get the measurements.” Others used emotive language, indicating fear or shame, to articulate how they

felt in anticipation of being measured. For example, Calum said that he felt nervous about going to be measured because he was so 'ashamed' of his body:

I was really nervous getting all the measurements done, coz when I started, yeah I was so nervous because I was so ashamed of my body, and I wasn't really wanted [wanting] any of that done basically, but I knew I had to get it done. (Calum, age 38, BMI: obesity class II)

Similarly, Gordon (age 40, BMI: obesity class I) described anticipating that the information he would receive at the measurements would be 'bad' or 'negative':

I actually thought my feedback would be pretty bad because I know I'm not, I know I'm not the fittest guy in the world there, I, I was very apprehensive about going into the, going onto it in the first place and I did think I would get a lot of negative feedback [...] I guess I just don't like people telling me how fat and how overweight [...] [I am]. It's something that I don't really like [...] I just don't think I appreciate it. I take it dead personally. So I think to actually go on something where people are telling you that, even though it's in a positive way, but they're still telling you that, I was just very apprehensive about [about] going.

These accounts suggest that some of these men had a negative body image and low self-esteem.

Some men also described feeling concerned about getting the measurements performed due to concerns about their health. For example, Dan (age 40, BMI: obesity class I) reported feeling particularly concerned about his blood pressure and cardiovascular system: "Obviously in the back of your mind there is a sorta [sort of] worry if you want, about your blood pressure, your cardiac system, everything, you know." Jonathan (age 47, BMI: obesity class III) also said that prior to attending he "was obviously concerned about [about] my weight anyway." Similarly, Billy described himself as nervous before getting his measurements taken:

I don't know whether it was just maybe a wee bit o' [of] nerves on my part, you know nothing that the, the people who were there had anything to do with - I think it was just a bit o' sorta nervousness on my ma point. When they took the first sorta blood, you know blood pressure it was kinda high [...]. (Billy, age 52, BMI: obesity class II)

In contrast, some men reported already being familiar with the type of measures done at baseline because they were checked at work or through regular medical monitoring. This meant they were less likely to describe being anxious or concerned about attending the measurement session. For example, three of the men mentioned prior experiences of having similar physical tests as part of routine assessments at their work place; Gary (age 50, BMI: obesity class I) said having the measurements done was:

not a problem 'cause [because] I used to get an annual medical, physical, so a lot of the tests were kinda similar [...] it was absolutely no problem, you know, it was like waist, lung capacity, blood pressure, all that sort of stuff so it's fairly standard.

Similarly, other men described having comparable types of physical assessments on a frequent basis, particularly for long-standing medical conditions (e.g. diabetes or high blood pressure). For example, Steven (age 33, BMI: obesity II) explained "I mean I'm diabetic so I go through that [...] rigmarole [...] I do it quite a lot, you know." Some men also mentioned they were taking medication for high blood pressure and had to have their blood pressure levels monitored regularly:

Aye, that was fine as well. I mean it was just like going for a proper medical examination tae see how fit and what kinda shape you were in type of thing, aye. I knew before I went that, I mean I'm on tablets for high blood pressure anyway, so I knew that that was gonnae be okay, cos [because] that was controlled by the tablets. (Ross, age 52, BMI: obesity class II)

One man (Chris, age 58, BMI: overweight) was unusual in that he said he already regularly monitored his own body weight. Therefore, he felt the information was not as important or anxiety-provoking for him at the beginning of the programme: "I knew what kind of weight I was already, you know, cos I tend tae measure myself in the gym and that".

Overall these findings indicate there were two main reasons for men being apprehensive about attending the baseline measurement session. Some said they were particularly anxious about being *told they were overweight* because they were embarrassed or ashamed, consistent with findings of Hunt et al (2014a). This could have been a threat to their already fragile self-image, low

self-esteem or social physique anxiety. Furthermore, men who feel ashamed of their bodies and have low self-esteem and/or self-worth may feel ill-equipped with the skills necessary to effectively alter their lifestyles. Consistent with SDT (Deci and Ryan, 2000), feelings of shame and embarrassment are likely to impede one's feelings of competence, a crucial antecedent of behaviours necessary for weight management (e.g. PA and exercise). Overall, these factors, in turn, could have contributed to their reasons for not attending previous health assessments or other weight management services, prior to enrolment in FFIT.

However, the findings also indicate that several men appeared to be more concerned about receiving information which confirmed their elevated health risk status as a consequence of being overweight or other related factors (e.g. high blood pressure). These findings therefore also suggest that some men may avoid actively going for similar health-related or clinical assessments due to fear of facing the reality of being at increased susceptibility to obesity-related diseases.

Men's emotions about being told they were overweight and/or fear of finding out about their elevated health risk status suffused their accounts. They often used language which suggested that, despite not wanting to have their baseline measurements performed, they had reached a point where they felt they '*had to*' alter their behaviours and lifestyles due to their own heightened perceptions of disease risk. Therefore, feelings of susceptibility to future adverse health outcomes were powerful drivers for some men, which energised them to take action and attend the baseline measurements, despite strong feelings of anxiety and trepidation about being told they were overweight or obese. In the next section of this chapter I describe men's experiences of being measured at the baseline measurement session.

4.3 Men's experiences of being measured at the baseline objective physical measurements

Once the men had gone through the sometimes challenging process of deciding to attend the initial baseline measurement session, the majority described the process of actually being measured as being a relatively '*positive*' experience.

Calum (age 38, BMI: obesity class II), who had been very apprehensive about going, stated that “when we started [...] I was like ‘oh I’m dreading this’ but I done it and I quite enjoyed it actually, to be truthfully honest.”

Many of the men welcomed the opportunity to be measured. For example, Gordon (age 40, BMI: obesity I) expressed “I’ve never actually been measured to that extent before”. Similarly, Alex (age 42, BMI: Obesity III) said “that’s the first time I’d ever had my blood pressure taken” and Jonathan stated (age 47, BMI: obesity III):

[...] up until then I’d never had a set of scales in the house. I never once took a tape measure to my waist. I never went to the doctors to get my blood pressure taken. I never done any of that. So getting those measurements taken for me was good from a health point of view.

Some men explicitly highlighted perceived barriers to accessing these kinds of objective physical measurements. For example, James (age 42, BMI: obesity I) stated:

[...] the good thing was that it did do all those measurements and sometimes that’s quite difficult accessing, or getting your GP to even do that. Because they don’t, you know... my GP doesn’t [does not] seem to do that. And then the last time I contacted them, they said it would cost £108 to get a basic health check done. You know, so the fact that the programme actually did that was really good, you know.

Similarly, Thomas (age 37, BMI: overweight) appreciated getting the measurements performed and said they were not something he would have gone to his doctor for:

I always wanted to know exactly where I was, and what I needed to get to in terms of my target weight. But it’s not something you would go to the doctor for, just to get weighed, and to get your height taken, and get your, find out your blood pressure.

However, despite having regular access to similar measurements some men had ignored actively measuring themselves. For example, two men who had easy access to most of the measurements whilst working as nurses had avoided utilising them prior to attending FFIT:

I have a nursing background so [...] I have a good basic understanding of the background of a lot of these measurements and the importance. I think for me, the advantage in it was I've got access [...] to do all these measurements in any given working day, [...] I can get my blood pressure taken anytime and I can do all that. But like everything else, you're working, that's not part of why you're there, and you don't [...].
(Michael, age 55, BMI: overweight)

In response to being asked about their experience of having the objective measurements performed at the baseline session, the men mentioned several factors which were important in ensuring they felt comfortable in a situation they might otherwise have perceived to be threatening or embarrassing. In the next section I describe in detail how the setting (i.e. the professional football club) and the people (i.e. other men in the group, club coaches and fieldwork staff) were crucial in creating a supportive environment for the men to have their physical measurements carried out.

4.3.1 The setting and the people

The men highlighted the importance of being measured *within the professional football club setting* and described this as a very encouraging and enjoyable aspect of the measurement process. For example, Tim (age 33, BMI: obesity class I) stated:

I certainly found it quite fun or quite, you know, it was a - the fact that it was at [Team02 football ground], for me, was a bonus, I suppose, is what I'm trying to say. It was just quite a cool thing to be going to your kinda football club's ground to take part in [...] you're doing it [the measurements] with a bunch of like-minded people in an environment that inspires you, [...] history side of things and what it means to, I guess, a [Team02] football fan. (Tim, age 33, BMI: obesity class I)

Tim described the importance of being surrounded by men with a similar interest (i.e. the football club) within an environment he perceived to be inspiring, particularly during the initial baseline measurement session. Ben (age 36, BMI: obesity class I) also described going along to be measured at the football club as a positive experience:

[...] I do think it's actually quite, I know, I found it quite invigorating and liberating and quite motivating actually to go there and it was done [...] in a very relaxed and [in]formal atmosphere and very positive, so no I thought it was a, a very positive experience, one that provided a good

motivation for, for making changes. [...] I did it at the ground and there was other people there in the programme and I think that in itself was motivating, that you're part of a group all with the same purpose. (Ben, age 36, BMI: obesity class I)

These examples show how these men particularly valued being measured in a setting they perceived to be motivating, and even inspirational. They also expressed the importance of being measured alongside men with common interests (i.e. the football club) and reasons for being there (i.e. to lose weight and/or get fitter).

The majority of the men emphasised the importance of being made to feel 'comfortable' or 'at ease' during the initial measurement process and described the fieldwork staff, who took the objective measurements, as 'friendly', 'professional' and 'supportive'. The professional and forthcoming attitude of the fieldwork staff was highly valued and described as being an important contributory factor in making them feel comfortable during the measurements. For example, Gary said:

The people that were taking all the measurements, [were] very polite and I [think] 'hink they knew it was maybe nerve-racking for some people so they were doing their best to keep everybody just feeling at ease. (Gary, age 50, BMI: obesity class I)

In this example, Gary highlighted the fieldworkers' important role in ensuring the men felt relaxed during the measurements and acknowledged that it may have been an anxiety-provoking experience for some men. Frank similarly reported:

I think the actual [...] process [measurement] [...] was done in a way that wasn't embarrassing or threatening [...] the people who were taking the various recordings on my weight, my height, etc [...] all of those kind of individual aspects of the recordings, did it in a way that you know made it as easy as possible or approachable, friendly, kind of I suppose tried to detract from any potential stress associated with that. (Frank, age 49, BMI: obesity class II)

Frank's comments highlight an underlying recognition that the measurements could have been 'embarrassing' or 'threatening' without the reassuring approach and demeanour of the fieldwork staff. However, a few did describe feeling 'awkward' or uncomfortable during the measurements. Andrew, for example,

expressed how being measured by a ‘total stranger’ was an unusual or peculiar experience:

CD: Could you tell me in as much detail as possible what it was like having these measurements done, and hearing any of the results?

Andrew: Being done? I thought it was... not gonnae say, not strange or weird, it's in between, it's like a total stranger. [...] It's like “I don't know you but you're doing my waist, my height and my blood pressure.” (Andrew, age 41, BMI: obesity class II)

Chris (age 58, BMI: overweight) also described feeling uncomfortable when he first had his measurements done:

I think... you know, it's always awkward the first time you go in [...] and you're meeting a group ae [of] people for the first time, you know, so there's a certain, if you like, awkwardness in that. But apart from that - I mean, that's just a human thing - but I thought everything was handled well, I thought that the people were professional, I felt that, it was girls that did it mainly [...], the girls and women were really, you know, they were really pleasant and, you know, and, you know, helpful, you know. So I mean, that was really good.

These findings demonstrate the importance of being made to feel relaxed and comfortable in what could otherwise be an anxiety-provoking experience. The men emphasised the personal and professional approach fostered by the fieldwork staff and valued their support throughout the measurement process. Some men described feeling awkward about first going along which was consistent with the accounts of other men who been more explicit about feeling apprehensive about going along to be measured. The support of the fieldwork staff was welcomed and it seemed important to the men that the fieldworkers struck the right balance between being ‘professional’ and being perceived as a ‘stranger’, but they also had to avoid being over-familiar.

Most of the men valued being told the reasons why each of the individual physical measurements was being conducted, as well as being informed exactly what was happening at each stage of the process. This was an important aspect of making them feel relaxed throughout. For example, Jeffrey (age 53, BMI: obesity I), said “they explained what was happening and what would happen next. So yeah I just felt [...] comfortable and at ease”. Frank (age 49, BMI:

obesity class II) reported how the “people were personable and approachable” and “delivered the information in an understandable way.” Ryan (age 54, BMI: obesity III) described how “the people who took the measurements informed us at all times why they were doin’ it and the reason behind it” and he “found great benefit from it.” Some men highlighted the fact that the fieldwork staff performed the measurements in a way which attempted to buffer any potential distress. For example, Gary (age 50, BMI: obesity class I) stated “they actually explain fully what it could be and, you know, so they don’t want to alarm people, you know so they’re very good at when they present the results.”

Some of the men described certain measurements as being particularly sensitive or anxiety-provoking and appreciated the information and reassurance they received from the fieldwork staff. For example, Jonathan (age 47, BMI: obesity III) articulated that he valued having the research staff there to talk to him about his ‘concerns’ and explain what was happening while he was getting his blood pressure taken:

I mean just speaking to the girls that were there, taking the blood pressure, explaining it all to you, talking about your concerns to them and things. I thought the girls that done the blood pressure tests to me were very helpful and I think made me feel at ease as well as telling me my blood pressure was slightly high. You know, so respect to they girls, I mean they done me a good turn.

Martin (age 34, BMI: obesity III) reported how the information he received from the fieldwork staff challenged his perceptions of his health-risk status and provided him with valuable information, particularly about his blood pressure:

[...] speaking to them [fieldwork staff] more in depth, ‘cause the doctor just used to say ken right “take these [...] tablets and then that’ll be fine”. Ken, they really never gave much of a guideline tae what I was and what I was doing to myself with that. I cannae mind the woman’s name that [was] daen’ my blood pressure. She did, she definitely laid it on the line, you know, what it was that was goin’ tae happen tae me [...] I thought about it more when I was getting them done there, ken rather than just taking tablets all the time [...].

Similarly, Ryan reported feeling supported and encouraged by the community coaches at the football club and the fieldwork team:

I was just delighted that there was someone there tae take time. The first time I went and had ma blood pressure taken I think the girl was a wee bit alarmed at the reading. But she says, “well just calm down, we’ll sit you down again,” done it again. I says, “Look, I know what my reading’s gonnae roughly, I’m on medication for it.” But she, she explained that you know doin’ the exercise, ma eatin’ plan and everything would help reduce it and it has reduced my blood pressure. [...] there was a lot of encouragement from not only the staff at [Team03] but also the staff at the University who were taking the measurements to give us advice and telling us not to feel down if at times things weren’t goin’ to plan. (Ryan, age 54, BMI: obesity III)

These data illustrate how the men valued being informed by the fieldwork staff what the measurements were for and why they were being conducted. Some men also highlighted the importance of the fieldwork staff in providing emotional support during the measurements. The combination of emotional support and practical information was therefore important in making the men feel comfortable or relaxed during what perhaps might otherwise have been a daunting or foreboding experience. These data also suggest that greater levels of support might be particularly important for certain men (e.g. those with very high blood pressure) who may require additional information and reassurance to alleviate concerns about their health risk status.

Two of the men described the importance of being measured in a ‘controlled environment’ or being part of ‘an official research scheme’. For example, Jonathan (age 47, BMI: obesity III) expressed that “when it became part of an official scheme or a research programme, it was kind of ‘oh this is serious now [...] I’ve no excuses’.” Similarly, Thomas (age 37, BMI: overweight) described getting “measured in a controlled environment, all [...] at once.” This was as an important contributory factor in his acknowledgment that “certain things in your life have to change. Otherwise it’s a kind of downward spiral.” These examples suggest the perceptions of a professional environment during the baseline measurements, as established by the fieldwork staff, were perhaps important for some men in consolidating their reasons for deciding to undertake the FFIT programme.

Some men described the initial measurement process as being quite a humorous or ‘funny’ experience. For example, Martin (age 34, BMI: obesity III) said “it wasn’t intrusive, it was actually a good laugh [...] ken the research team made

us feel at ease”. George also highlighted the importance of finding himself surrounded by men of a similar body size/shape and fitness level:

Well, because we were all [...] of the same ilk, size and sorta the same fitness, it was actually quite funny, everybody had a joke about it. I had no problems because I had obviously an idea of the kinda size and shape and form I was in, it was all done very well and it was all done with, shall we say for want of a better word, all the diplomacy that you could actually give when you're taking measurements, because let's face it, some of us weren't that small. But I had no problems both in the first [...] measurement session. And, as I say, because we were all, the guys were all the same ilk, it was really quite a funny experience. (George, age 56, BMI: obesity II)

Similarly, David (age 49, BMI: overweight) reported:

Yeah, well, initially when we first started, there was quite a few of us there and were all having a kinda laugh and joke about it. And then everybody got measured you know, and obviously everybody, well, most of the people were a bit overweight. It was a bit of a laugh and a joke.

These examples show how the men used humour to perhaps alleviate some nervousness, embarrassment or apprehension associated with the measurement process and they valued being amongst other men of a similar body size/shape and fitness level.

These findings suggest that for some men the range of clinical measurements encountered at the baseline measurement session were novel and provided valuable information on specific health risk parameters they would not otherwise have access to. Prior to attending the session, some perceived these kinds of measurements as not something they would have gone to their doctor 'just' to have carried out, despite knowing the importance of these metrics in ascertaining health risk status. Furthermore, a few men said they had regular access to similar kinds of measurements in different settings (e.g. workplace) but had chosen not to have such measurements done outside the context of the FFIT programme. Importantly, this was despite having substantial concerns about their risk of obesity-related ill-health. Consistent with theoretical understandings of masculinities and health, several men might have avoided having such measurements performed in settings which were incongruent with

their identities as men and which could have threatened their sense of their masculine competence.

These findings illustrate that a combination of factors were essential to making the men feel at ease, comfortable or reassured during the baseline measurements. The 'place' (i.e. the football ground) was described as being motivational and/or inspiring, whereas the 'people' (i.e. other men perceived to be like them; the fieldwork staff; and the community coaches) provided a combination of supportive and facilitative roles. Finding themselves surrounded by men perceived as being similar to them made them feel comfortable and unthreatened, and helped to initially alleviate feelings of awkwardness or unease. Other attendees were not perceived as being younger or fitter men and so did not undermine the men's sense of competence or self-esteem. The fieldworkers were required to be professional and supportive while at the same time not appearing to be too familiar with men. They also had to maintain a degree of informality which allowed some humour to relieve any potential anxiety or embarrassment associated with the measurement process. All of these factors contributed to the men's experiences of undertaking the objective baseline measurements as being; positive, unthreatening, enjoyable, helpful, motivating and sometimes 'funny'.

These findings are consistent with research conducted with men from other deliveries of FFIT which have described the ways in which men used self-denigrating humour to help them to discuss sensitive topics such as weight or health-related issues (Hunt et al., 2014a). They are also congruent with the delivery style of the programme which actively encouraged the use of humour and camaraderie to facilitate men's discussion of more sensitive issues (Gray et al., 2013a).

The interpersonal communication style of the fieldwork staff was another vital aspect which contributed to the men's positive experiences of the baseline measurements. The men's perceptions of the fieldwork staff as being hospitable, forthcoming, empathetic, supportive, non-judgemental and unthreatening helped to alleviate feelings of tension, stress or anxiety and helped them to feel 'at ease'. Importantly, the men referred to the fieldwork

staff predominantly as ‘girls’, despite there being both male and female fieldworkers in the measurement teams.

The men described the information as meaning more to them within the context of the measurement sessions than simply attending a regular health screening or appointment with their doctor. These findings could also reflect the importance of being more in tune with the perceived meaning of their health-related measurements and the fact that they became more aware of how these objective measurements related to their own unique lifestyles and behaviours. This perhaps resulted in a shift away from more externally based beliefs about their health (e.g. being given medication by their doctors to control their blood pressure) to a more internal focus (e.g. engaging in healthier lifestyles for their own reasons, which, in, turn, would alter their objective risk factors).

These findings could be interpreted as being consistent with what SDT (Deci and Ryan, 2000) defines as providing a meaningful ‘rationale’ which is thought to be a critical component of an autonomy supportive environment. According to SDT, autonomy support is critical for optimal psychological wellbeing and has been shown to be important in promoting the internalisation of specific attitudes and beliefs within particular domains. Ryan et al (2009) posit that, when others appreciate another person’s perspective, it promotes rationales for action, which, in turn, facilitates reflection and choice, which results in greater feelings of autonomy. Furthermore, autonomy supportive environments also have the power to satisfy the other two essential needs (i.e. competence and relatedness).

The men reported how they felt the fieldwork staff had invested effort into helping them by providing genuine interest and care. For example, one of the men spoke about how he felt “a certain level of friendship [...] and people actually cared about you as an individual rather than you were just a number attending a course” (Jonathan, age 47, BMI: obesity III). The men perceived a sense of empathy from the fieldwork staff whilst having their measurements carried out. These findings are congruent with what SDT defines as relatedness support and are consistent with some of the ways in which Silva et al (2014) recommend that relatedness support should be promoted.

Overall, these findings suggest that the demeanour and interpersonal communication style adopted by the measurement staff were integral to making sure the men felt comfortable and relaxed. By utilising both sociological understandings of masculinities and SDT as complementary theoretical frameworks through which to interpret these findings, I was able to reveal the ways in which the setting (i.e. the professional football club) and the people within in it (i.e. the fieldwork staff and other men enrolled on the FFIT programme) were important inter-related factors that ensured the men felt at ease within a situation that could have been perceived by the men as ominous or threatening.

4.4 Men's experiences of receiving information on their objectively measured indicators of health risk

Whilst above I have considered the context and environment in which the measurements were conducted, I now focus on men's reactions to receiving their personal feedback on their objective measurements during the session. Some men used emotive language to express how receiving this information made them feel, but the feedback provoked a wide range of responses.

Several men described feeling shocked when they found out how much they weighed. For example, Billy (age 52, BMI: obesity class II) said "at the start [...] you find out that your're ... a wee bit sorta overweight and stuff [...] sometimes it could be a wee bit o' a shock for somebody to tell you that." Some of the men also mentioned they had expected their results to be more positive than they were:

David: [...] some ae the results tae me was a bit, a bit ae a surprise, actually, in the feedback. Knowing how really unhealthy I wis.

CD: You mentioned there it was quite surprising. In what way, David?

David: Well, just, I mean, I thought my results would be better than whit they were, you know? My blood pressure was high, I was obviously overweight and I didnae really think I was that bad, I thought I was okay. (David, age 49, BMI: overweight)

Similarly, some of the men already knew they were overweight but were shocked to find out their actual body weight. For example, Jamie (age 36, BMI: obesity class I) mentioned:

The size they wur - I knew, myself, I was getting big but when I realised I was over eighteen stone, I thought that was a bit ae a shock and it wasnae very good, so I knew something had to get done pretty drastically [...].

Some of the men reported feeling particularly surprised or shocked when they were told their BMI classification, especially those who were told that their BMI placed them in the 'clinically obese' category:

Well that's, that was the first time I'd ever seen my BMI. I'd never, I'd heard about it but I'd never actually knew what it was, what it meant, [...] to find out that I'm first called clinically obese was a bit of a shock. I knew I was overweight but I didn't think it was clinically obese so that was a bit of a kinda kick in the teeth for me. Kinda brought me doon tae earth a wee bit as well in that respect. [...] I'm a referee so I'm oot and I'm running about and I'm active [...] but the BMI kinda hit home that I'm no' actually that fit. I am actually obese and I need to do something about it as quick as I can. And that kinda scared me a wee bit [...], if I'm being honest, it did scare the life oot me. [...] I know I am heavy or fat or whatever you wantae call it, I don't see myself as being that overweight and that fat that I needed to go onto one of these fitness things until I got there then I realised that 'well yeah, I do'. (Gordon, age 40, BMI; obesity class I)

In this example, for Gordon, being informed that he would be classed as 'clinically obese' on the basis of his BMI had a particularly powerful impact and forced him to re-evaluate his perception of himself.

Some men expressed shock at getting feedback on some measurements but not others. James, for example, was not surprised by his body weight measurement but was shocked to hear that he had high blood pressure:

I mean, there was no surprises there because I've got scales at home so I kind of weigh myself fairly regularly anyway, [...] I knew I was overweight [...] the only thing [...] I didnae think my blood pressure would be as high [...] but that was a positive thing because obviously it then meant that I could go and get [...] appropriate help for that. (James, age 42; Obesity I)

A few said they were not shocked or surprised by any aspects of information they received on their health-risk indicators. Donald (age 49; Obesity III), for example, said: “Nothing upset, nothing that I wasn’t particularly aware of myself [...] obviously [I was] overweight [...]. Nothing, I don’t think that surprised me in the slightest.”

A few men described other emotional responses on receiving feedback on these measures. For example, Michael (age 55, BMI; overweight) felt ‘annoyed’ at himself:

I was probably more annoyed that I’d let myself get to that state. [...] I was always fit, so for me to get to that state [...] I would probably have said the overriding emotion in me was annoyance in allowing myself to get to that state.

Ryan (age, 54, BMI; obesity class III) described himself as feeling ‘disgusted’ when he was told he was classified as clinically obese:

I knew, I knew before I started the, the, the course I was what you would call was “clinically obese” because of my body mass – I, I realised that. Different people perceive it in different ways. I felt a bit ... phew ... how can I put it ... I felt not shocked, I felt disgusted with myself when they said “you’re obese ... [obese]” – I knew I was obviously obese [...].

In contrast, Jonathan (age 47, BMI; obesity class III) blamed himself for his weight-related problems and said: “it’s more or less self-inflicted – my weight issue and things.” He also said:

Nothing really upset me because I think I’d prepared myself before I went, because obviously I knew I was heavy and my physical shape was too big. So I mean I was well aware all those, problems I would put them down as, before I went. So being told, it basically confirmed where I thought I was. [...] it obviously means a lifestyle change, to change these figures round about. So being told that you’re twenty stone and then having to go and admit to everybody else you’re actually twenty stone was a bit embarrassing [...].

Some men described getting information on their objective physical measurements as being a very positive experience as it gave them specific health-related parameters which could be improved upon throughout the 12-week programme. For example, Billy explained:

[...] these things are highlighted and you see [...] you say to yourself, “well, hud oan a wee minute,” everybody ... wants tae feel better an’ they want to look better you know, it’s just a natural human reaction so yeah I would say that, that the things that were - at that stage did sorta highlight a few areas an’ things that you could look into and, and... you know, reach for sorta thing you know to make yourself feel an’ look better. (Billy, age 52, obesity class II)

In contrast, some men were less vocal about the emotional aspects of receiving feedback on their physical measurements. Ben (age 36, BMI; obesity class I) used language to suggest he perceived the baseline measurements as being an essential but somewhat unpleasant component of taking part in the programme (e.g. ‘necessary evil’) despite saying they did not emotionally impact upon him in anyway:

I took it to be a necessary evil of something that I had to do to get that baseline to start from. It didn’t emotionally have any effect on me other than that initial motivation that “Ok, this is me getting that baseline and I’m going to change this”. [...] There was no other emotion there; it was just something that you had to do to get your [...] baseline.

Grant also described receiving information about his baseline measurements as having minimal emotional impact:

None of the results bothered me - or was surprised by them or anything like that. Taking the measurements - probably just one of these things that I had tae do to get through to get tae the ... the programme. And - and nothing really fazed me I didn’t really have any problems with it, you know? [...] I wasn’t really fazed again by any of these, eh, measurements [...] Naw I wasnae - I - I’m not pleased aboot being huge if you know what I mean, right. But I knew, ye have tae just be what ye are and try and get down tae what you’re ... Probably when I was taking the measurements, nothing pleased me, like “aww great, that was fantastic” ... But nothing really upset me either. I - I just done it was a matter o’ course and, eh, I can’t think of anything that bugged me - “I wish I wasn’t that or I wish I was half an inch less than that”. (Grant, age 58, BMI; obesity class III)

Grant was also one of a few of the men who questioned the validity of their BMI as an accurate indicator of obesity or health-risk status. He said:

Well BMI I’ve gottae say is a hundred years old. The BMI, I don’t - I don’t take much significance on BMI, right? BMI, tae me, the - the whole of the English rugby team who won the World Cup were all obese due to this BMI. BMI doesn’t take any consider of any muscle content or - or -

you know - they're all overweight because of their muscles and, eh, I don't really - I'm no' really bothered about BMI.

Grant cited professional athletes as examples of men who would be classified as obese due to their muscle mass. Gary (age 50, BMI: obesity class I) was also sceptical about BMI as a reliable measure of obesity:

[...] the results that I got were sort of pushing me towards, almost, obese, which was kinda surprising because I didn't feel obese, whilst I knew I was overweight, but then, you know, having been on medicals before, the BMI isn't the most precise of measurements and it probably doesn't take into account somebody's physical stature and muscle content [...].

Gary described himself as being shocked at hearing that was he classified as obese but, like Grant, was critical of BMI as an indicator of obesity. Gary said that although he didn't 'feel obese' he acknowledged that he did need to implement changes to his lifestyle. The language Gary used (i.e. 'almost obese') was indicative of several of the other men who also tended to underestimate their weight. Ryan (age 54, BMI; obesity class III) also cited rugby players as part of his rationale for disputing the legitimacy of BMI as a measure of obesity: "I've since learnt that certain rugby players who play international rugby can be classed 'clinically obese' because [...] their size etc just different make ups".

Despite some of the men being shocked, surprised or even disgusted by the results of some of their measurements, several of these men also described receiving the information as being a positive experience.

For example, some men described receiving information on their objective measurements as an important '*benchmark*' against which they could compare themselves as they progressed through the 12-week programme and beyond:

It was very positive, especially when I first started to find out exactly how much I weighed because I didn't know at that time and then obviously keeping a tab on how much I'd lost over the duration of the course. (Alex, age 42, BMI; obesity class III)

[...] helpful to [...] know what those are - particularly at the start of a process, to give you a baseline, and you know, to obviously help inspire you to kinda try and drop some of those numbers and improve things along the way. (Tim, age 33, BMI; obesity class I)

Several men discussed the importance of being measured objectively by someone other than themselves as it reinforced the fact some results were not within 'normal' or acceptable limits. Many of the men described receiving their objective feedback in '*black and white*'. Seeing the information 'written down' also prompted them to consciously acknowledge their health/weight-related issues. For example, Thomas (age 37, BMI; overweight) stated:

it almost, kind of, put everything in black and white [...] you knew yourself you were overweight and needed to do something, but to actually have things measured in a controlled environment, all done at once, you then see the results there and then, and you do realise that, you know, certain things in your life have to change.

Jonathan (age 47, BMI; obesity III) emphasised the importance of having his weight-related measurements recorded objectively and highlighted the fact that other people (the fieldworker) was able to see what he weighed: "If I was standing on the scales myself and no-one saw what I weighed it would be different, but I think because people saw what you weighed, it was recorded." Tim explicitly stated that he valued the fact someone was there during the measurements, who was able to inform him that some of his results were higher than they should have been:

Sometimes you just need somebody else to sort of [...] I don't mean they were telling you, you know, you need to lose weight, but simply just [...] somebody else taking these measurements kind of gives you a bit of, yeah, reinforcement that, actually, some of these figures or numbers are on the high side, or a bit too high. (Tim, age 33, BMI; obesity class I)

George (age 56, BMI; obesity class II) suggested that someone other than himself performing the objective physical measurements prevented him from 'cheating' or deluding himself:

It was better someone else doing it objectively than me cheating. [...] it's easier for somebody to keep your score objectively... if somebody can measure your waist size or your breathing or your... for instance, I wouldnae know how to do blood pressure and blood pressure is a fairly good gauge of your health. So, if somebody knows what they're doing, knows where to measure your waist or your chest or your blood pressure and can do it, you know, fairly well, [...] because it's easier for somebody else to monitor than you monitor your own score.

For several of the men seeing information on their health-risk indicators, either recorded or written down, was very important as it validated their reasons for attending the programme. For example, Frank stated:

I kinda knew it instinctively that I was overweight. I knew instinctively that my BP was high, but getting the recordings done confirmed that and gave me a sense of “well, that validates why I’m here”.

Jamie (age 36, BMI; obesity I) also said: “once you realised how big you were and you looked at yourself properly in the mirror [...] you realised, then, that aye, you are too big.” Michael (age 55, BMI; overweight) explained that seeing the information ‘written down on paper’ made him realise his measurements were ‘unacceptable’:

[...] I knew my stomach was sticking over my trousers, but if I didnae weigh myself and if I didnae take my waist measurements, then I didnae need to accept responsibility, and I didnae need to do anything about it (laughs) you know, almost, I suppose the type of person I am, I wouldn’t have accepted [it] [...] so I forced myself to go to the programme and actually get the measurements, and it’s written down on paper, then it becomes unacceptable, I mean I suppose the reality is, it was always unacceptable but when you’re no’ actually taking responsibility for, for that, and you’re just almost in denial and just ignoring it, so when you get they measurements and it’s out there, you think, ‘right that’s it, this can’t go on’ [...].

Michael suggests that receiving feedback on his objective physical measurements prompted him to take responsibility for his health, to make a conscious effort to change his behaviour.

Overall, for several men receiving objective information on their health risk status was described as being important in confirming they had made the ‘right’ decision to enrol on the programme. While the majority reported already knowing they were ‘overweight’, several men expressed having not realised the extent to which they had gained weight or become obese. Seeing the information written down or ‘recorded’ encouraged some to confront or challenge misperceptions they may have had about their weight or health risk status, prior to being measured. These findings extend previous research indicating that men are more likely to underestimate their susceptibility to obesity-related diseases (DeVille-Almond et al., 2011).

Some men reported how receiving feedback on their measurements incited strong emotional responses. When faced with a potential threat to their health, some men used emotive language (e.g. shock or disgust) which could be seen as incongruous with stereotypical notions of masculinity (e.g. stoicism and emotional repression). This may be because when faced with a significant threat (e.g. health concerns) men often reject or deviate from dominant notions of masculinity; Tannenbaum & Frank show men often adopt health-related behaviours only in circumstances whereby their perceived ability to perform more valued masculine roles are compromised (e.g. Tannenbaum and Frank, 2011).

However, some men were critical about some of the information they received, particularly in relation to BMI. These men were also less likely to have elicited emotive language in response to the measurements. These findings suggest that some overweight or obese men may be more resistant to messages or health risk assessments that rely solely on BMI as a means of communicating elevated health risk status. The current findings are also consistent with previous assertions that men are more likely to challenge biomedical definitions of 'normal weight' status (e.g. Gray et al., 2011) and be content with their size when overweight or obese (e.g. Monaghan, 2007).

The men highlighted the significance of receiving information on their health risk status as a '*benchmark*'. Thus, receiving a diverse range of objective metrics enabled them to monitor their progress after taking part in the FFIT programme. This was important as it afforded them different means of interpreting and visualising changes in their health risk status that extended beyond weight loss alone. The information also gave the men the ability to ascertain their personal weight-related target. The measurements were therefore perceived as being a form of monitoring and feedback which enabled the men to measure their progress throughout the 12-week programme.

The majority of men stressed the importance of seeing objective feedback in '*black and white*' and was described as some men as being incontestable. Receiving objective feedback on their health risk status motivated some men to take responsibility for their own health and be potentially more willing to

embrace behavioural change. In the next section of this chapter I examine the impact of receiving information on objectively measured indicators of health risk on men's motivations or behaviours during the baseline measurement session.

4.5 Impact of receiving information on objectively measured indicators of health risk

Having discussed their immediate reactions to receiving their personal feedback, I now focus on what, if any, impact they felt this had on their actions or perceptions. The majority of men mentioned they had enrolled onto the FFIT programme because felt they had already reached a point where they felt 'ready' or willing to make lifestyle changes. For example, Steven said:

I suppose it was just kinda the confirmation of I was heavier than I've ever been before [...] that's what influenced me [...] I was determined. [...] I'd reached the stage where I was ready [...] I knew I had to do something about it. So, I suppose that was the real motivation for me. (Steven, age 33, BMI; obesity class II)

However, receiving information on weight-related risk factors at the baseline measurement sessions prompted different responses. From my analyses of these data I identified two main groupings in relation to the ways the men reacted to or responded to the information: 'confirmation of expectations' and 'motivation for action'.

4.5.1 Confirmation of expectations

The men in this grouping said that being given information on their objective physical characteristics confirmed what they already thought or suspected about their weight or health risk status, which, in turn, reinforced their reasons for wanting to embrace a healthier lifestyle. For example:

[...] just getting some of that information in black and white forms, at a time when I was willing to change you know my thoughts and behaviours around food and exercise, was helpful [...] I was ready for change. So that information supported my [...] my cost benefit analysis and my pros and cons of why I was trying to lose weight. (Frank, age 49, BMI; obesity II)

Similarly, Tim (33, BMI; obesity I) mentioned: “Hearing things like your BMI and [...] what band that's within [...] just reinforced to me that I could really do with making a change.” Chris (age 55, BMI; overweight) stated being told his objective physical measurements highlighted certain ‘things’ he was not doing (i.e. regular exercise or eating a healthy diet) before taking part in the programme: “I think it really just reaffirmed [...] probably some things that I knew, [...] I wasn’t doing, you know?”

However, despite reinforcing their reasons for enrolling on the programme, some explicitly said that receiving information on their objectively measured health risk indicators was not sufficient in itself to motivate subsequent behavioural change. For these men, various components of the subsequent programme were more important with regards to motivating lifestyle changes:

CD: Did any of the measurement feedback, or any of these measurements make you want to make [...] any changes in your life?

Tim: Yeah [...] - yes and no, probably not the measurements in themselves. The rest of the programme certainly did, but probably the measurements, themselves, other than just reinforcing what I already suspected or knew, you know, they didn’t, in themselves, kinda push me on to making change.

CD: So you would say that the measures, themselves, weren’t strong enough to motivate you?

Tim: The measures, themselves, no, not for me, personally, no. They reinforced what I already knew, but had that, if that had all - if that is all I was doing, which is going along for that, the kinda measurement session right at the start, then I wouldn’t have lost the weight that I’d lost through the process. (Tim, 33, BMI; obesity I)

Similarly, James said the programme, combined with the peer support of taking part in FFIT, was more important with regards to motivating change:

I don't think the actual measurements made me think I need tae make the changes, I think it was more to do wi' [with] [...] going along to the programme and the support of the coaching staff plus also the other participants, you know. (James, age 42, BMI; obesity I)

Gordon (age 40, BMI; obesity class I) articulated that receiving information on his health risk indicators was not enough to motivate behavioural changes which he attributed to his own mental health issues:

CD: Did any of the feedback, Gordon, make you want to make changes in your life?

Gordon: If I'm being honest I would say probably not. I think, it's a difficult one that, Craig, because I feel as if because I've got mental health problems I do feel as if it's hard for me [...] on a personal level to take positive feedback on board and it's hard for me to then carry that forward and make changes 'cause I'm so stuck in my own ways.

For these men being told their objective measurements confirmed or reaffirmed what they already knew or suspected about their health risk status, but this in itself was not perceived as being powerful enough to motivate behaviour change alone. However, being provided with the information was still described as being important because it reinforced the men's initial intentions or reasons for wanting to endorse lifestyle changes by taking part in the FFIT programme.

4.5.2 Motivation for action

The men in this grouping, by contrast, recalled being given information on their objective physical measurements as motivating in its own right, and encouraged them to adopt lifestyle changes:

You get they measurements and it's out there, you think, "right that's it, this can't go on, I need to do something about it, I need to lose this stomach, I need to get myself a bit fitter and get my blood pressure down a bit". And [...] you know so that helped kick start me. (Michael, age 55, BMI; overweight)

These men were more likely to have explicitly described being motivated to alter their lifestyles in response to increased perceptions of vulnerability to ill-health as a result of being given feedback on their own measurements. They were more likely to cite health concerns as their main source of motivation for wanting to lose weight and adopt healthier lifestyles by taking part in the programme (Section 1, Table 5, pp. 129-130). For example, Frank said:

I was relatively near retiral age as a nurse and I kind of thought that the last thing I wanted to see was myself a few years [...] having [...] a

stroke or some kind of physical, serious physical problem because of my weight. And at that point I kind of thought “well this information confirms that that’s more likely than less likely and I needed to do something about it”. (Frank, age 49, BMI: obesity class II)

These men were also more likely to explicitly cite their capacity to perform valued roles within the family as being important which they perceived as being threatened by receiving information which highlighted their heightened risk of ill-health. For these men ‘being there’ for family members (e.g. children or grandchildren) was often the primary reason given for their desire to alter their lifestyles and adopt healthier behaviours (Section 2, Table 5, pp. 130-131). This is illustrated by Thomas (age 37, BMI; overweight) who cited the combination of his own perceived risk to disease and having a young family as important drivers for change:

[...] I knew I was obviously a couple of stone overweight, which, I suppose it isn’t massive, but - when I realised my BMI was about 29, I think it was, and my blood pressure was a little bit higher than it should be. And when [...] you see certain words, when you read online about it, such as, you know, diabetes, cancer, stroke, etc etc, it kind of hits home. And especially having a young family, you know, only 38, and I kinda realised at that point - I realised before, but it kinda hit home more at that point, that, you know, unless I do something now, I might leave it too late.

Men within this group were more likely to explicitly attribute their health risk status as being a consequence of their own unhealthy lifestyles which invoked a desire to make ‘urgent’ or immediate changes to their lifestyles. The men used language such as ‘my fault’ or ‘self-inflicted’ to indicate the responsibility they felt (Section 3, Table 5, p. 131). For example: Jamie stated: “that’s my fault, more than anything else” (Jamie, age 36, BMI; obesity I); Alex said the information made him: “take notice of what I was doing to myself” (Alex, age 42, BMI; obesity III); and Jonathan blamed himself saying: “it’s more or less self-inflicted” (Jonathan, age 47, BMI; obesity III). These men also used language such as ‘drastically’, ‘now or never’ or ‘sit up and take notice’ to describe their immediate reactions to the information and their desire to take action in response (Section 3, Table 5 p. 131).

The men who described being motivated in response to receiving this objective feedback were also more inclined to elicit emotive language to describe how the

information made them feel. Some reported feeling surprised or shocked, whereas others said they felt ‘angry’, ‘disappointed’ or even ‘disgusted’ at themselves (Section 4, Table 5, pp. 131-132). They were also more likely to negatively appraise the information they were given on their health risk parameters and described wanting to actively alter their lifestyles in response (Section 4, Table 5, pp. 131-132):

[...] depending on your personality you can take it different ways, I found it motivating, [...] I didn’t like what I was hearing, my response to not liking what I’m hearing is to do something about it. (Michael, age 55, BMI: overweight)

Subsequent analysis showed that the men who described being motivated to alter their behaviour in response to the baseline measurement information, were more likely to be those who lost at least 5% of their weight by the end of the 12-week programme.

These findings indicate that for some men receiving information on their indicators of health risk was an important motivator for action. They are consistent with several prominent theories of health behaviour change (e.g. The Health Action Process Approach; Schwarzer, 1992, 2008) which posit that increased risk awareness (alongside outcome expectancies and perceived self-efficacy) are the most salient predictors of intention or motivation to initiate health behaviour change. However, the findings are also consistent with alternative perspectives of behaviour change which have illustrated the importance of medical triggers, life events or life crises (e.g. sudden awareness of one’s own mortality or recognition of the association between one’s own behaviour and health status) in prompting the adoption and maintenance of behaviour change (e.g. Ogden and Hills, 2008, Ogden et al., 2009). In line with these theoretical perspectives, receiving information on health risk status could have served as an important trigger or event for some men which prompted, or reinforced, their motivation to change their behaviour.

The theoretical framework of SDT also provides a useful framework for interpreting these findings. According to SDT, avoidance of a perceived health threat is a form of *external regulation* which can provide an important source of motivation for engaging in health behaviour change. However, this form of

motivation is unstable and only powerful in the short-term when the perceived health risk is present. In contrast, motivation to engage in health behaviours in pursuit of recognised or valued health benefits is referred to as *identified regulation* and a more stable and enduring form of motivation. Another form of motivation within the SDT framework is integrated regulation whereby behaviours are performed in line with one's core values and beliefs. Both identified and integrated regulations are forms of *autonomous* or *self-determined motivation* and are associated with more positive behavioural and health outcomes. The men could have been initially motivated to alter their lifestyles (i.e. by changing their diets and increasing PA) in response to the information, not only to avoid their health risk but also to enhance their health prospects (i.e. identified regulation) and/or preserve other valued aspects of their identities (e.g. integrated regulation), such as 'being there' for family members.

4.6 Summary

Overall the findings outlined in this chapter highlight the ways in which men spoke about being measured and given objective feedback on their weight and other health risk status indicators within the context of the FFIT programme (see Figure 5, p. 128). Some men said they were particularly apprehensive about going along to the initial baseline measurements as they felt embarrassed or ashamed of their bodies. The findings also suggest some men were especially worried or anxious about getting measured and receiving information which confirmed their increased risk to obesity-related diseases. However, the findings also reveal that some men were less concerned about having their measurement done as were already familiar with the type of assessments performed at the baseline measurement session (see Figure 5, p. 128).

These findings reveal that the professional football club setting and the interpersonal communication style embraced by the fieldwork staff were crucial factors to ensuring the men felt at ease and content in an otherwise potentially threatening situation. Most men said they were aware of being 'overweight', however, several men reported not having realised the extent to which they put on weight or become obese. Seeing information *written down* or '*recorded*' encouraged some to challenge misperceptions they may have had previously

about their weight or health risk status. Some highlighted the importance of being measured and given feedback by someone other than themselves. However, a few men were more critical about the information they received, particularly in relation to BMI. Some reported how receiving objective feedback on their measurements provoked strong emotional responses. Receiving objective feedback within the context of FFIT confirmed to them that they had made the *right* decision to enrol on the programme. These findings indicate that for some men receiving objective feedback motivated them to take action to improve their health and potentially more willing to embrace behavioural change. Sociological understandings of masculinities and SDT provided valuable and complimentary theoretical frameworks to understand these findings.

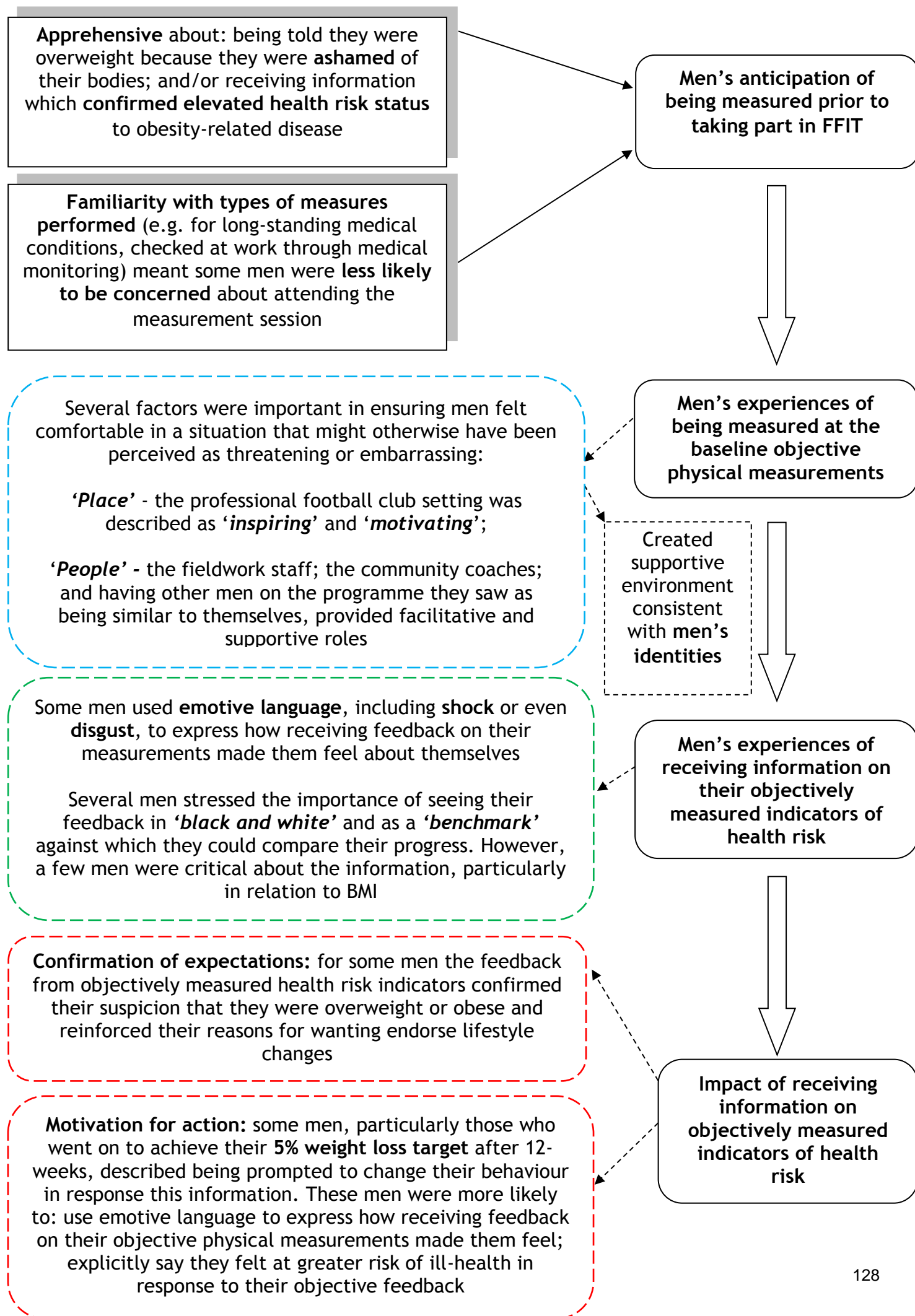


Figure 5 Summary of men's reactions to receiving objective feedback on their health risk indicators pre-programme

Table 5 Impact of receiving feedback on health risk indicators

	Verbatim quotes
<p>Motivation to alter lifestyles in response to increased perceived vulnerability of ill-health as a result of being given information on indicators of health risk</p> <p>Section 1</p>	<p>[...] I was relatively near retiral age as a nurse and I kind of thought that the last thing I wanted to see was myself a few years [...] having [...] a stroke or some kind of physical, serious physical problem because of my weight. And at that point I kind of thought “well this information confirms that that’s more likely than less likely and I needed to do something about it”. (Frank, age 49, BMI: obesity class II, % weight loss; 9.67)</p> <p>I always knew I had to do it but it was finding the right frame of mind to do it. But I found that once I came tae that Football Fans in Training, seeing everythin’ in front of me and how I was leading my life, it did make me realise that what I was doing just wisnae, it just wasn’t good enough and I had tae change my life or I would’ve been very unh-, no’ [not] well I think in later years [...]. (Martin, age 34, BMI; obesity class III, % weight loss; 10.31)</p> <p>I suppose it’s just a natural reaction you know, you’ve seen something an’ [...] you’ve become a wee bit determined [...] tae say, “yeah right enough’s, enough. [...] I need tae dae something about this.” (Billy, age 52, BMI: obesity class II, % weight loss; 7.50)</p> <p>[...] one of the boys had lost two of his pals who [...] didn’t keep their selves fit but they were fifty-five, who’d died o’ heart attacks [...] who’d lost weight more than I was carrying and they exercised a bit more than me [...] you start writing these things down and listening tae people you say “well, I’ve got to take cognisance o’ these facts I can’t just turn a blind eye and think I’ll live forever” [...]. (Ryan, age 54, BMI; obesity III, % weight loss; 11.52)</p> <p>[...] it made me feel as if I [...] wasnae as healthy as I should be, you know, and I could dae more for my health. [...] it made me really say, “right, [...] I’m gonnave tae dae this tae get fitter.” (David, age 49, BMI: overweight, %</p>

	<p>weight loss; 5.74)</p> <p>[...] I would have just [...] gained weight and I would've killed myself [...] that was my motivation to [...] getting myself healthier again. [...] I know these were [...] a bad aspect getting all the measurements, but it also showed you how unfit you were, and what you had to do to get you in the right frame of mind to start this programme. [...] the worrying, the actual thing [...] that did actually force ye to do it was yer health. [...] Ye [you] just said "no, I dinnae want to die an' I want to keep going, [...] lose the weight, I have to get my health under control". (Calum, age 38, BMI; obesity II, % weight loss; 5.17)</p> <p>[...] it made me sit up and take notice [...] if I didn't try and improve how I was, I could end up dead before I was roughly 50 [...]. (Alex, age 42, BMI; obesity III, % weight loss; 5.94)</p>
<p>Desire to fulfil or sustain valued roles in response to receiving information on their indicators of health-risk</p> <p>Section 2</p>	<p>[...] I wasnae been able to exercise as much with my 6 year old son that I had, doing a lot of running about in the garden and that and I was getting out of breath very, very quickly [...] [due] to my unfitness [...] sometimes folk would give out, "you're a fat this and you're a fat that", and you thought to yourself, "I'm no happy with people calling me things like that" [...] the fact I want to see my son grow up and marry and things like that, you know, that was my main determination. A lot of times what folks said to me I wasnae worried aboot, it's what I thought, "I want to see that wee man grow up, I don't want to end up dead before he's a certain age". (Alex, age 42, BMI; obesity III, % weight loss; 5.94)</p> <p>[...] my waist size was too big. My BMI index must have been in the kind of dangerous side. And again it was just a wake-up call-come-confirmation of what I knew anyway [...] Time to do something about it. [...] I'm trying to think how to put it, how I felt. "Aye it's time now to do something about it before it's too late," [...] I started, believe it or no' I started to think about my family and different things like that as well that [...]. (Jonathan, 47, BMI; obesity III, %</p>

	<p>weight loss; 15.99)</p> <p>I've got grandkids who supported me, [...] my grandson said, "you try to stay healthier Grandpa for me, to live longer to be wi' [with] me," and as soon as he said it I realised it was like a light switch getting put on. (Ryan, age 54, BMI; obesity III, % weight loss; 11.52)</p>
<p>Men's recognition of health-risk status being attributable to their unhealthy lifestyles and willingness to make urgent behavioural changes</p> <p>Section 3</p>	<p>[...] Just realising how overweight you are. In my eyes anyway it just, obviously I knew I was big, I knew I was overweight. But I think a lot of people as well used to say tae to me "oh aye, but you're a big laddie, you can carry it well". Ken, but... the truth was there, it was just I was very overweight and seeing it all written down in front of me, how big I was, how unfit I was, how unhealthy I was, made me realise I've had tae dae it. It was basically a now or never and I'm glad I choose the, the now if you know what I mean. (Martin, age 34, BMI; obesity class III, % weight loss; 10.31)</p> <p>[...] that's my own fault, more than anything else [...] I was getting big but when I realised I was over eighteen stone [...] I knew something had to get done pretty drastically [...] the size I was, was just ridiculous [...]. It motivated me drastically. [...] it motivated a hell of a lot to get myself sorted out. (Jamie, age 36, BMI; obesity I, % weight loss; 6.07)</p> <p>[...] "it's time I really did something about the problems." Because it's more or less self-inflicted - my weight issue and things. (Jonathan, 47, BMI; obesity III, % weight loss; 15.99)</p> <p>Yeah, as I said, it made me sit up and take notice of what I was doing to myself [...]. (Alex, age 42, BMI; obesity III, % weight loss; 5.94)</p>
<p>Men's emotive language used to describe the impact of receiving information on their indicators of health risk</p>	<p>Well before it was quite a shock hearing them to actually realise how big I was and how unfit I was. (Martin, age 34, BMI; obesity class III, % weight loss; 10.31)</p> <p>[...] I was disappointed I was over the twenty stone mark, "cos I thought I would</p>

<p>Section 4</p>	<p>never [...] be twenty stone,” [...]. But I took that as “now is the time to do something about it” [...] there was an opportunity given to you to try and do something [...] I felt that was enough to motivate me tae use o’ the information. [...]. (Jonathan, 47, BMI; obesity III, % weight loss; 15.99)</p> <p>[...] depending on your personality you can take it different ways, I found it motivating, [...] I didn’t like what I was hearing, my response to not liking what I’m hearing is to do something about it. (Michael, age 55, BMI: overweight, % weight loss; 7.58)</p> <p>[...] I didn’t really want to see my waist at that level, didn’t want to see my BP was this high. (Frank, age 49, BMI: obesity class II, % weight loss; 9.67)</p> <p>[...] I knew before I started the, the, the course I was what you would call was “clinically obese” [...], I realised that. Different people perceive it in different ways. I felt [...] not shocked, I felt disgusted wi’ [with] myself when they said “you’re o... o... [obese]”- I knew I was obviously obese [...]. (Ryan, age 54, BMI; obesity III, % weight loss; 11.52)</p>
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Matrix impact of receiving information on objectively health-related metrics.xlsx - Microsoft Excel

	A	B	C	D	E	F	G
1		A : 3.1 Shock	B : 3.2 Perception of risk	C : 3.3 Motivator or prompt for action	D : 3.4 Confirmation	E : 3.5 Reference point for comparison	F : 3.6 Emotional reaction
2	12130C 5% weight loss at 12-weeks = Yes Age = 33 BMI (Baseline) = 36.92 BMI Classification (WHO) = Obesity II	<p>It was fine, it was nothing really I didn't expect. I'm diabetic so go through that rigmarole reasonably quickly. I do it quite a lot. So it wasnae anything I found shocking or anything like that.</p> <p>No, not particularly. I suppose I was quite surprised by - when you actually start looking at the calorific content of food. That was the most enlightening thing.</p>	I suppose hearing about how it can effect you going forward... I'm not saying I was blind to it 'cause I was aware of it's just the kind of reinforcement of it.	<p>The overall weight was the one that made me think I actually need to do something and lose it. But I don't think it was the result of feedback. It was probably more I could feel my shirts getting tight and I was struggling to get in an extra-large.</p> <p>The confirmation I was heavier than I've ever been before. That's what influenced me and you know I was determined.</p> <p>I think the important thing for me was the fact I'd taken the step of applying for it-</p> <p>I'd reached the stage where I was ready to... I knew I had to do something about it.</p> <p>I suppose that was the real motivation for me.</p>	<p>It was just confirmation I was heavier than I've ever been that's what influenced me.</p> <p>I'm not saying I was blind of it because I was aware of it but it's the reinforcement of it.</p>		
3		<p>It was quite a shock hearing them to realise how big and unfit I was.</p> <p>I knew I had high blood pressure</p>	<p>Speaking to them in more depth, the doctor just said "take these tablets and you will be fine". They didn't provide any guideline to what I was doing to</p>	<p>The woman definitely laid it on the line, what was going to happen tae me... she didn't mean to scare me or anything but I felt shocked. I thought about it more when I was getting if done there. rather than iust taking tablets all</p>	<p>I always knew I had to do it but it was finding the right frame of mind but once I came to FFIT and saw everything in front of me (how I was leading my life) it</p>		<p>The woman definitely laid it the line, what was going to happen tae me... she didn't mean to scare me or anything but I felt shocked. I though</p>

Figure 6 Screenshot of framework matrix: men's reactions to receiving objective feedback on their health risk indicators

5 Chapter five: ‘It’s like a personal motivator that you carried around wi’ you’: men’s experiences of wearing the pedometer to quantify and increase their physical activity levels

5.1 Introduction

Self-monitoring of behaviour is one of the most effective behavioural change techniques to increase one’s activity levels and lose weight (Michie et al., 2009). The qualitative analysis reported in this chapter extends previous research on men’s experiences of using pedometers as self-monitoring tools during the walking component of the FFIT programme (Hunt et al., 2013). These data draw on men’s accounts of the ways in which they said they used the pedometer to self-monitor their steps and what they said about continuing their activity. These analyses shed light on the extent to which motivations have been internalised and activity levels regulated. The chapter begins: first, outlining men’s perceptions of walking as a useful and accessible form of activity; second, their general attitudes towards the pedometer as a technology for self-monitoring their activity; third, what they said about using the pedometer as a self-monitoring tool during the 12-week programme; fourth, what they said about the influence of the setting and other people on their motivation for using the pedometer during the programme; and fifth, what the men said about the role of the pedometer after the 12-week programme and differences in the accounts of those who achieved and did not achieve their 5% weight loss target at 12-weeks. Finally, I will summarise the findings of the chapter and will consider them in relation to the main theoretical frameworks which have informed my analysis, namely SDT and sociological understandings of masculinities.

5.2 Men’s perceptions of walking as a valued and accessible form of physical activity

Almost all of the men I interviewed agreed that walking was a simple form of PA that nearly anyone could do to increase their fitness levels and achieve health benefits. For example, Ben (age 36, BMI: obesity class I) said: “Walking is actually a very natural activity [...] everybody has the opportunity to walk [...] you don’t

have a fitness barrier in order to actually start walking.” As well as describing walking as ‘natural’ and ‘the easiest exercise’, men described it as very accessible as it incurred little or no financial costs and did not require any special equipment. For example, Frank (age 49, BMI: obesity class II) said walking is: “relatively cost free. All you’re wasting is shoe leather I suppose.” These findings are consistent with previous research on men’s experiences of taking part in the walking component of FFIT during earlier deliveries of the programme (Hunt et al., 2013).

Several of the men also gave reasons why they had felt unable to take part in other forms of PA, often because of a combination of feeling embarrassed or ashamed of their physical fitness to perform more strenuous forms of exercise, as a result of their weight or other physical limitations. Walking was described by the majority of men as being an ideal form of PA which enabled them to increase their activity levels and experience associated benefits without putting them at risk of injury or adverse health consequences not compromising their self-image:

Walking for me is a great form o’ [of] exercise. I have got a problem with my right knee, [...]. [I] wasn’t able to get it operated on so when I do any real strenuous exercise involving serious movement ae [of] my knee joint, it tends to pop out of place and it’s a kinda dislocation and it’s quite painful. So I’m very much aware ae [of] what activities I can do and I don’t particularly like swimming as you can maybe appreciate being the weight that I was I didnae like taking my clothes off in public. So I was able to walk in straight lines without any real problem even to the point where I could actually jog slightly, but prefer walking because I don’t look so stupid. (Jonathan, age 47, BMI: obesity class III)

While the majority of the men said they thought walking was a valuable and health enhancing form of PA, a few said that the benefits were dependent on one’s initial activity and/or fitness levels. In the following example, Michael explicitly referred back to his previous levels of fitness when he was younger and stated walking could be perceived as ‘boring’ by fitter individuals:

I think depending on your level of fitness [...] when I joined the course in January, it [walking] was very much the right thing for me at that time, because I couldn’t have went running or anything like that [...] ten years ago would I have joined a course like that? I might have thought about it, but my level of fitness [...] walking would have been a complete waste of time, I would need to have started wi’ [with] running at that time [...] is

walking a good exercise, absolutely, but [...] if you're someone who has always maintained a level of fitness and been used to exercising, walking can be a bit boring as opposed to [to] running or you know, whether that's running as in jogging or running as in playing football, or you know or badminton or whatever [...]. (Michael, age 55, BMI; overweight)

This and similar examples are indicative of the minority of men who reported being very active earlier in their lives or were slightly younger than the majority of men on the programme. In the next section of this chapter I describe men's general perceptions of wearing the pedometer during FFIT.

5.3 Men's general perceptions of wearing the pedometer

The majority of the men described the pedometer as being a very useful and valuable piece of technology for monitoring their activity (i.e. number of steps performed) both during the programme, and for some men, beyond. This was partly because it was small, easy to use, portable and non-intrusive (Section 1, Table 6, p. 138). Most of the men said they enjoyed wearing the pedometer and a few described it as one of the most valuable components of the entire programme (Section 2, Table 6, p. 138). Some of the men described the initial first few days of wearing the pedometer as being 'strange'. However, most said they soon got used to wearing it as part of their daily routine and found it to be an effective and accessible device for quantifying their activity (Section 3, Table 6, pp. 138-139).

The men described very few negative aspects of wearing the pedometer (Section 4, Table 6, pp. 139-140). However, some reported that they felt annoyed or even 'cheated' when the device failed to accurately record their steps. The men usually attributed any misrecordings to inaccurate placement of the pedometer on the body or as a result of wearing specific items of clothing that prohibited the device from accurately recording their steps. Some men reported other problems with the pedometer, such as the battery running flat, device malfunction, or occasionally forgetting to wear the pedometer.

Most quickly adapted to wearing the pedometer and said they did not mind the fact that it was sometimes visible to other people (Section 5, Table 6, p. 140). However, two men explicitly stated they did not like the fact other people could

see them wearing the pedometer because it made them feel self-conscious, particularly in their workplace. One of these men said he actively went out and purchased another type of pedometer that could be worn discreetly. Conversely, some men described the fact other people could see the pedometer as being important for encouraging conversation about why they were wearing it. Thus for some the pedometer was seen useful in illustrating to other people their conscious efforts to engage in healthier lifestyles. This in turn, could reinforce their intentions or determination to succeed in their efforts. In the next section of this chapter I describe in detail how the pedometer served as a tool for objective feedback and self-monitoring during the 12-week programme.

Table 6 General perceptions of wearing the pedometer

	Verbatim quotes
<p>The pedometer as an non-intrusive, easy to use, portable piece of equipment with few barriers or negative issues associated with wearing the device</p> <p>Section 1</p>	<p>I suppose it's a very small, easily [to] wear, discreet bit of equipment. (Frank, age 49, BMI: obesity class II)</p> <p>You didn't even notice a lot of times it was there because it was on [...] the waistband or the belt of your trousers, so if you just went about your normal business. (Alex, age 42, BMI: obesity class III)</p> <p>It's so small, it's no' [not] uncomfortable, it's no' heavy, nothing like that. (George, age 56, BMI: obesity class II)</p> <p>I didnae have any, any issues wi' [with] it [the pedometer] at all. (Billy, age 41, BMI: obesity class II)</p>
<p>Men's enjoyment and perceived importance of wearing the pedometer as part of the physical activity component of the programme</p> <p>Section 2</p>	<p>I just love wearing the pedometer. (Calum, age 38, BMI: obesity class II)</p> <p>I almost looked at it as often as I would look at my watch. So I was quite obsessed wi' [with] it. [Laugh] I found it great so I enjoyed wearing it. (Jonathan, age 47, BMI: obesity class III)</p> <p>I loved it. Absolutely loved it. I became step-obsessed [...] I thought it was one of the best things that we got. (Chris, age 58, BMI: overweight)</p> <p>Wearing the pedometer itself was really, really good [...] it's probably one of the most important things that we got from the programme. (Thomas, age 37, BMI: overweight)</p>
<p>Men's initial perceptions of the pedometer as a 'strange' or 'novel' piece</p>	<p>It was strange at first, [...] here's this novel thing on my waistband. (Grant, age 58, BMI: obesity class III)</p>

<p>of technology that quickly became a habitual part of their daily routine</p> <p>Section 3</p>	<p>I mean the first day or so you noticed it was there, you brushed against it whatever. After the first day or so actually it just blended in with your lifestyle. You were used to it being there, it didn't bother you. It was no hassle at all. (Matthew, age 47, BMI: obesity class III)</p> <p>It was just a case o' [of] when you go up and, when I got up in the morning I just used tae [to] stick it, as soon as I was washed, changed, ready and whatever, I just used tae stick it on my belt, on my trousers, and if I, if I'd forgotten to put it on and I maybe was halfway oot the door or something like that, it was, "oh, no, I need tae go back and get my pedometer on," it was just [...] habit-forming and [...] you got used tae having it on and you wanted tae have it on." (Ross, age 52, BMI: obesity class II)</p> <p>After a couple o' [of] days you automatically put it on [...] it's no' [not] a chore, it's no' a test you just, you automatically - it becomes part o' you sorta thing. (Billy, age 41, BMI: obesity class II)</p> <p>The odd day where you actually forgot to put it on, you kind of felt a bit disappointed, or a bit lost without it. It's almost like leaving the house without your mobile phone or your wallet sometimes. It just, as I said, second nature to put it on. (Thomas, age 37, BMI: overweight)</p>
<p>Men's negative experiences of wearing the pedometer to quantify their activity levels</p> <p>Section 4</p>	<p>The only problem was once I hadn't put it on right and I felt as though I had [...] actually done quite a bit of walking that day and I felt a wee bit cheated by it all. (Dan, age 58, BMI: overweight)</p> <p>Sometimes it didnae actually register yer walk, but that's, it's actually where ye positioned it on yer body [...] somebody's told me to put it between the centre and the thingy'll register it all the time [...] and that's what I done. (Calum, age 38, BMI: obesity class II).</p>

	<p>I then learnt [...] the type tracksuit trousers I maybe had on was the wrong type at the waist tae get it [...] you wear the stuff that'll no bend or put it on a belt. (Ryan, age, 54 BMI: Obesity class III)</p> <p>I had to get a new one during the course [...] I thought the battery had went [...] but that was the only problem that was [...] mechanical. (George, age 56, BMI: obesity class II)</p> <p>I've broken it [the pedometer], and I need to get another one. (Chris, age 58, BMI: overweight)</p> <p>I keep washing them. They end up in the washing machine. (Jonathan, age 47, BMI: obesity class III)</p>
<p>Men's perceptions of the pedometer being visible to others while they were wearing the device during their daily lives</p> <p>Section 5</p>	<p>Conscious for the first day, or so, you were wearing it, and people could see you were wearing it - but I mean, it was nothing. (Jamie, age 36, BMI: obesity class I)</p> <p>The only thing was that sometimes it can be quite visible, you know. Especially when you're at work [...] that can maybe potentially be an issue, you know, depending if you're in a meeting or whatever and you've got a pedometer on, you know, so that's the only issue really [...] because if you're maybe wearing a suit and then suddenly you've got a pedometer on and people would maybe wonder what that is or, you know [...] that's the only issue. (James, age 42, BMI: obesity class I)</p> <p>At first it was a bit awkward 'cause I do hospitality work so having a pedometer sticking oot the back o' your shirt was a bit awkward at first. So I went out and I bought a new pedometer that fits in a pocket and using that actually made a big difference to me. I felt more comfortable wearing it. (Gordon, age 40, BMI: obesity class I)</p> <p>[...] a few people initially noticed it because [...] it is noticeable if people see it. They'll notice it's not something you would normally wear, especially at work.</p>

	<p>But that actually added to the conversation that you would have about why you were wearing it. You know, “well what I’m wearing is a pedometer [...]” and in terms of me, people would ask me so you kind of have a conversation [...]. (Frank, age 49, BMI: obesity class II).</p> <p>Everybody knew I was wearing it and people used to ask me about it. [...] Everybody I know knew I was wearing it. Everybody I knew, knew I was doing the FFIT course. I didnae hide it. I think that was part o’ my admitting that I was too heavy. I told everybody I was doing something about it. And I think that made me “I’m telling everybody, I’m doing this course, I need to succeed.” (Jonathan, age 47, BMI: obesity class III)</p>
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5.4 The pedometer as an instrument for objective feedback and self-monitoring during the 12 week programme

As indicated in the introduction, the pedometer-based incremental walking programme, based on Walking for Wellbeing in the West (WWW) (Fitzsimons et al., 2008, Fitzsimons et al., 2012, Baker et al., 2008), was an important part of the PA component of the FFIT programme. Several of the men, as demonstrated above, described how the pedometer was an essential component of the programme which enabled them to quantify and increase their activity levels. Initially the pedometer was extremely important as it revealed how inactive most men were in their daily lives. During the first week the men were asked to track their average daily step counts over one week to establish their baseline number of steps. They then used this as a benchmark to incrementally increase their step count targets over the 12-week programme. Some of the men expressed shock or surprise at how low their step count was. For example, Michael (age 55, BMI: overweight) said “it kind of confirmed how ‘sedentary’ I was, you know and how little exercise I was actually getting”. Along similar lines, Alan (age 44, BMI: obesity class I) mentioned “it reinforces what lack of movement [...] in terms of how sedentary unfortunately people’s lifestyles are.” Alan’s reference to ‘people’s’ lifestyles and not just his own behaviour, perhaps reflects his recognition of the general constraints on people’s ability to live an active lifestyle within modern environments which encourage a sedentary lifestyle.

These and other extracts illustrate that some men may have considerably overestimated their activity levels prior to using a pedometer to monitor their activity levels. The shock that some expressed at their lack of activity appeared to increase their motivation to increase their PA levels by engaging with the walking component of the FFIT programme. The pedometer was therefore a very valuable tool as it provided the men with awareness of their (in)activity levels at the initial stages of the programme which they felt they could not contest. These findings are consistent with previous research with men taking part in an earlier delivery of FFIT, which found that men perceived their initial feedback from the pedometer as being ‘reliable’ and ‘indisputable’ (Hunt et al., 2013).

Having gained a clearer understanding of their baseline activity levels, most men described the importance of setting goals each week to increase their activity levels, particularly during the first few weeks of the programme and for some men, beyond the 12 weeks. The men expressed how the pedometer enabled them to achieve their PA goals by providing them with instantaneous feedback on their activity levels on a daily basis and allowing them to determine precisely how far they were from achieving their goals. Men's accounts were redolent with references to self-regulation, self-monitoring and goal setting, particularly during the initial 12 weeks of the programme. For example, several men described having a strong drive to achieve their own PA goals, especially during the 12-week programme:

I was aiming for like ten thousand steps per day and if I had maybe looked at it [the pedometer] about three o'clock in the afternoon an' it had only maybe four thousand, five thousand on it, then I knew I had to go for like a walk to try and get my ten thousand up [...] I feel if you don't set a goal, then you've nothing to work towards, ken. 'Cause you're thinking say "well oh I think I've done enough", ken, but the pedometer actually tells you you've no' done enough", ken. So it keeps you going if you know what I mean (Martin, age 34, BMI: obesity class III)

The language used by Martin (e.g. "I knew I had to") demonstrated that he felt a strong desire or need to achieve his own personal PA targets and stated how important it was for him to set PA goals. The feedback from the pedometer enabled him to see how far he was from reaching his goals and adjust his route accordingly which was described as motivating. Matthew similarly described how the pedometer functioned as a portable 'personal motivator' which enabled him to monitor his activity levels and set specific PA targets:

I mean it actually showed you the lack of exercise you're doing because obviously it counted the steps you were doing. So, let's say you had [...] five thousand steps to do that week, right? a) it gi'd [gave] you how much steps you were walking normally. And, b) because you were doing it you said "no I can beat that, I can do better than that". You walked long distances round rather instead of taking the short direct routes ... I suppose it's like a personal motivator that you carried around wi' you. (Matthew, age 47, BMI: obesity class III)

Some men said their desire to achieve their step-based activity goals also helped them to overcome challenges to becoming active. For example, Ryan stated that he felt motivated to go walking and reach his PA goals despite being faced with specific barriers (e.g. bad weather):

I think [...] there was times you'd maybe say, "ach, I don't feel like goin' oot the day the weather's bad," but you say to yourself, "wait a minute, I've got ma steps to do," you know and you went out and you did it. Whereas if you were to go to a gym you say, "ach, I'll leave it I'll go another day to the gym." But I can honestly say I was goin' oot two, three sometimes four times a day daen ma walkin' because you enjoyed it. (Ryan, age 54, BMI: obesity class III)

Several men were explicit about the importance of the objective feedback being '*readily accessible*'. For example, Ben (age 36, BMI: obesity class I) described the instantaneous feedback from his pedometer as one of the most motivating aspects of the entire programme:

I've got to say that was probably the one single most motivating element of the programme, was having that almost instant feedback as to how you were doing on a sort of a minute by minute basis [...] you're thinking "ok [...] I've done eight and a half thousand steps. If I go home I'll probably just about make ten thousand steps or if I walk along to the gym and spend an hour or half an hour on the stepper I can get up to fifteen thousand steps" [...]. So yeah, it was [...] very, very motivating and I think it was the immediacy of the feedback that made it so motivating. (Ben, age 36, BMI: obesity class I)

According to SDT (Deci and Ryan, 2000), events and social conditions that support the basic needs for competence and autonomy are hypothesised to be conducive to intrinsic motivation. Congruent with SDT, the activity of self-monitoring with the pedometer satisfied the men's feelings of competence (i.e. achievement of PA goals) and gave them optimal challenge (i.e. gradually increasing their step-based goals at their own pace) which was described as being 'fun' or 'enjoyable' in itself. For example, most men said they found the process of self-monitoring their activity an enjoyable or rewarding experience. Ross (age 52, BMI: obesity class II) said "I used to look forward to seeing how many steps or extra steps I'd done in a day". A few men were also keen to reinforce the beneficial and rewarding aspects

associated with using the pedometer to self-monitor their activity levels, suggesting that everyone could benefit from using one:

I wore it religiously [the pedometer] [...] I like measuring things. I have a milometer on my bike and all that stuff, you know? So it's, for me it's, it was a huge thing, the pedometer, you know? Every home should have one [...] I, personally, I loved it. I loved having the pedometer, you know? It's, and I'm not just saying that [...] I like my arithmetic and maths and so on, and, you know, for me it was a [...] a huge part of the course [FFIT programme], you know? (Chris, age 58, BMI: overweight).

Some men emphasised the importance of their PA behaviour being self-initiated, under their own volition and not feeling coerced to increase their activity levels, which was facilitated by the pedometer: "You're not being forced to do it, you're walking at your own speed" (Andrew, age 41, BMI: obesity class II). The pedometer was described as being akin to a 'gauge' or a piece of machinery: "it was an instrument [...] just like a speedometer [...] the information that you got out [out] o' [of] it was self-driven" (Billy, age 52, BMI: obesity class II).

Men used language that implied that the pedometer supported feelings of competence and mastery. The feedback was often described as '*proof*' or *evidence* not just of whether or not they had successfully increased their PA levels, but that this was a behaviour that they could change and which appeared surprisingly achievable:

I think it just, it gave me the proof, if you want, that I could, without any great effort actually, just increase [...] the numbers of steps [...] if I hadn't quite managed to get as many steps as I'd wanted, yeah it gave me the perfect sort of push [...]. (Dan, age 58, BMI: overweight)

The men also described how the feedback from the pedometer prevented them from overestimating their activity levels. For example, Ryan mentioned how important the pedometer was in providing him with an objective measure of his activity levels which prevented him from 'cheating':

I adopted the attitude that the machine wasnae' gonnae' beat me if you know what I mean [...] if you didn't have something to focus on it'd [it would] be dead easy to fool yourself by saying, "well I've done..." you could go oot a walk and say, "well that's me done my ten thousand steps,"

or whatever my target, my baseline was plus whatever they'd set that week, you say, "ach, that's me done it." Whereas the pedometer showed you, you know, a) yes, you haven't done your target or b) you've exceeded it. And if, in exceeding your target you felt a bit o' self-achievement [...] if you had nothing to gauge [...] in your own mind a lot of times you'd think [...] we'll take the easy route and say, "ach well that's me done it, who's gonnae' know if I have or I haven't" but you're only cheating yourself. (Ryan, age 54, BMI: obesity class III)

In explaining how the pedometer helped to motivate them to remain committed to achieving their activity-based goals and continue to self-monitor their activity levels, some of the men used language which personified the pedometer (e.g. 'conscience', 'best pal' or Mathew's description above as the pedometer as a 'personal motivator'). Ben described the pedometer as being analogous to a "good fairy" which prompted him to be more active:

[...] I wouldn't compare it [the pedometer] to like a personal trainer but it is a way of saying "ok then, if I want to, I need to increase my activity levels on a daily basis and I know that I've increased from..." I think my average was four and a half thousand steps as my initial average, and I knew after a couple of weeks that I wanted to maintain a minimum of ten, and it gave me that way of measuring it [...] you have a choice of the easy option or the hard option and the pedometer became the good fairy sitting on your shoulder when you wanted to make a decision. "What would the pedometer say if I do this action?" (Ben, age 36, BMI: obesity class I)

Similarly, Gary said the pedometer acted like his "conscience":

Yeah, it was almost like my conscience [the pedometer], you can't count steps, you maybe think that you've done a lot of walking, but unless you've actually got the device there telling you what you've done then you don't know for sure and you could let it slip, [...] you've only got your own mind telling you to do things [...] if you've not got something concrete to prove that you've been active [...] in black and white and dark grey and light grey, sitting there telling ye [you] [...]. (Gary, age 50, BMI; obesity class: I)

Therefore, for several men the device was perceived as an *ally* or facilitator that helped them to keep a track of and achieve their activity-based goals, which, in turn, helped internalise necessary self-regulatory habits (i.e. self-monitoring) into their daily lives. Some men even said they felt they had to apologise to the pedometer when they relapsed or were tempted to make decisions incongruent

with their wider goals or intentions. For example, Frank (age 49, BMI: obesity class II) said “I kind of almost apologise to it [the pedometer] if I slip [...] maybe going to the chip shop one night”. Similarly, Jamie (age 36, BMI: obesity class I) stated “it [the pedometer] used to be your best pal, at times”.

The language used by the men to personify the pedometer and feeling like they had to ‘apologise to it’, is consistent with what SDT defines as ‘introjected regulation’. Introjected regulation is when behaviour is motivated by internal rewards (e.g. self-worth) or punishments (e.g. guilt). According to SDT, introjected regulation is the first partially internalised form of extrinsic motivation whereby the value of the behaviour has been partially internalised; however, it is seen as relatively unstable as the value of the behaviour has not been fully assimilated as part of the self. Therefore, the men’s accounts suggest that the main source of motivation to use the pedometer and achieve their step-based goals is avoidance of guilt and not necessarily because they desire to.

A few of the men’s accounts suggested the pedometer also served as a symbolic representation of their broader intentions to engage in healthier lifestyles/behaviours, which went beyond providing them with a literal representation of their activity levels:

[...] I think it just keeps your mind on track o’ what you’re doing and the fact that you’re putting on - I suppose it’s a constant reminder that watch what you’re eating as well. It’s something physical that you’ve got to dae, attaching it to you when you get up in the morning and moving it fae whatever you’ve had on ontae your working clothes that you’re wearing. So I suppose it’s a constant reminder as well. (Kevin, age 47, BMI: obesity class I)

Several of the men attributed many of the tangible benefits (i.e. increased fitness levels and associated weight loss) experienced during the programme occurring as a direct result of their increased activity through walking, combined with dietary and other lifestyle changes. For example, Michael (age 44, BMI: overweight) said: “walking made a huge difference [...] the impact of [...] starting to see the pounds coming down on the scales.” These benefits demonstrated to the men that walking alone was a sufficient means of achieving significant health enhancing

effects and helped to dismiss previous misperceptions that more traditional forms of exercise (such as, running or circuit training) were necessary for weight loss and additional health benefits, which were incongruent with their self-image:

[...] it's hard to explain it to someone I suppose that hasn't done it but it's like a new [...] lease of life to me, it's a new goal. The pedometer to me was a great help because it, it showed you how inactive you were at the start o' the course and how active you could be without really - not killing yourself, without, you know, I've tried goin' to the gym, I've tried doin' circuits and all that, and that just sorta takes, you get fed up wi' it, you become disillusioned with it, whereas the pedometer there's no strain, you're no tryin' tae kill yourself but you realise that the way it was put across to you by the staff that gave instructions at [club03] and by your own staff - you don't need to kill yourself to become healthier and fitter and the pedometer shows you that [...]. (Ryan, age 54, BMI: obesity class III)

These men's accounts are consistent with 'identified regulation' which according to SDT is a more self-determined form of self-regulation whereby the importance or value associated with performing a particular behaviour is recognised and accepted as one's own. Behaviours that are regulated via identification are predicted to be sustained longer than controlled forms of motivation as they are performed independently of external rewards (Ryan et al., 2009). Therefore, by using the pedometer to self-monitor their activity levels, these men were able to quickly experience the tangible benefits associated with walking. This, in turn, confirmed that walking was a sufficient form of PA which was congruent with their abilities. As this process evolved, motivation became internalised and the use of the pedometer maintained.

One of the men said he perceived the pedometer as being like a 'badge', 'totem' or 'certificate' of his successful lifestyle changes which helped motivate him to sustain behavioural changes and which he carried around as a *symbol* of his achievements:

It's also something, a physical thing, to represent some of the changes that I've made as well as my clothes are different now and, it's just another thing to think that reminds me, even if I don't look at the steps it reminds me that I'm, I've got a different view about exercise now, I've got a different view about eating. It's almost like a totem in that respect [...]

it's like the badge; it's like the certificate really that you can carry about pretty discretely without people really noticing to remind you of the success that you've had. (Frank, age 49, BMI: obesity class II)

The pedometer served as an external symbol of the men's success, beyond the literal expression of their activity levels, which continued to remind them to extend their healthier lifestyles beyond the programme. These findings are also consistent with SDT as the device continued to reinforce the men's feelings of competence and provided a portable motivational prompt which could be worn beyond the programme. The device also symbolised the fact they now held different values and beliefs which transcended beyond self-monitoring and into other aspects of their lifestyles and other domains (i.e. dietary behaviours). This is indicative of what SDT refers to as 'integrated regulation' whereby new behaviours have become fully synthesised and assimilated alongside one's core values and beliefs. Therefore, previously externally regulated behaviours have now been transformed into autonomous self-regulation. Deci and Ryan stipulate that integrated regulation is the most stable and enduring form of external motivation and shares many similarities with intrinsic motivation. However, despite being volitional and valued, integrated behaviour remains extrinsically motivated as it is performed instrumentally for the attainment of a separable outcome and not for the inherent satisfaction of performing the behaviour for its own sake (Ryan and Deci, 2000a). Therefore, the pedometer functioned as a physical reminder of the men's newly integrated behaviours and their success with regards to achieving certain milestones (e.g. tangible changes in clothing and appearance).

However, not all of the men expressed positive experiences with using the pedometer, which may in turn, have impacted upon their decision to continue to wear the pedometer post-programme. In contrast to Hunt et al (2013), who reported that none of the men taking part in an earlier delivery of the FFIT programme expressed any negative comments about the pedometer and the walking programme, a few men in this study said, that as the weeks progressed, they began to find the programme too much of a challenge with regards to keeping up with their recommended step-based goals:

[...] I think the targets themselves are good but maybe the targets are a bit ambitious towards the end of the programme when you're continually trying to build on what you've already achieved. I found that you got to a certain level where you were making a certain number of steps and then it was hard to increase it further. (Donald, age 49, BMI: obesity class III)

Alan and James both described being unable to keep up with their PA goals due to their perceived competing priorities for their time (e.g. working in a sedentary job, commuting time and family commitments):

I found it [the pedometer] a wee bit dispiriting if you like [...] it started off as maybe being five thousand steps or something like that and before you know it it's meant to be twelve and fourteen [...] if you're working in here a forty hour week then you've got transport in and out from the city and then alright I play football for example on a Friday [...] I've got other things to do, other aspects of this word 'family life' therefore it's very difficult then to sort of say, "I need to go out and do ten thousand steps," [...] When you're only really maybe doing two and half a day type thing [...] you're chained to a desk if you like [...] the only time you get up to go about and move about is within a small proximity around the desk area to other meetings, down to the canteen and off to the toilet. So therefore the amount of walking about you can actually physically do during the course of a day or a working day [...] you're typing away on a computer screen, you know? (Alan, age 44, BMI: obesity class I)

Similarly, Grant (age 58, BMI: obesity class III) said he felt his step-based targets escalated to a level he perceived to be unattainable. He used language to suggest he felt as if he did not have a sense of control over his own PA goals (e.g. "they [would] want me") and perceived the pedometer as being somewhat of a 'tyranny':

I was doing something like eight thousand steps a day and I knew that if I do eight thousands steps a day they [would] want me [to do] five hundred and a thousand [...] all of a sudden I knew that it would be twenty thousand steps a day to - to sustain [...] I don't think it's sustainable. So [...] at the start I was going "right, well keep it going, if I can get tae ten thousand and no anymore than fifteen thousand, I think that's sustainable." So I was kinda watching what I was doing. But it was getting up and up [...] it was things like eighteen thousand steps a day I had to do. And then I was realising, "here I cannae make eighteen thousand steps a day." And I was coming home and I was looking at my step counter [the pedometer] like, "aww maybe three thousand steps short of my - my target." And I was running on the spot to make up my three thousand steps and it might

take me fifteen minutes, twenty minutes [...] it was like a governor, you were ruled by this pedometer [...]. (Grant, age 58, BMI: obesity class III)

Therefore, for a minority of men reaching their step-based targets became too difficult once their PA goals increased beyond a level perceived to be achievable. For these men the pedometer became more of a tyranny than a positive tool. So for them the pedometer was viewed as being oppressive or controlling and undermined their autonomy. This might, perhaps, have contributed to some men's disengagement with their PA goals and continued use of the pedometer. It is important to note that the walking programme was specifically designed so that once the men had managed to achieve a certain level of fitness they were encouraged to move onto other forms of PA. They were told that 10 minutes of moderate-intensity PA was equivalent to 1000 steps and encouraged to select activities they enjoyed and suited them, but clearly this message was not heard by some men.

According to SDT, conditions or events perceived as undermining feelings of competence and autonomy are thought to hinder intrinsic motivation and the internalisation of extrinsically motivated behaviours. SDT also suggests that amotivation (i.e. a state whereby one lacks intention to take action) is likely to occur when a person lacks either a sense of competence or perceived control with regards to achieving a particular behavioural outcome (Deci and Ryan, 2000). Thus, men who were unable to achieve their step-based goals or felt pressured to achieve unattainable goals, were likely to have become amotivated and therefore were void of both extrinsic and intrinsic motivation for continuing use of the pedometer.

Sedentary occupations were cited by a few of the men as being some of the most salient barriers to successfully increasing their activity levels during the programme. Therefore, men who found themselves confined to occupational settings which negatively constrained their attempts to enhance their activity levels, may have experienced further challenges with regards to achieving their step targets, which, in turn, could have hindered their motivation to continue using the pedometer. In contrast, men who worked in jobs incorporating more

free living movement throughout their daily lives may have experienced greater feelings of autonomy with regards to being able to enhance their activity levels and were potentially exposed to greater experiential benefits of increased PA during the 12-week programme (e.g. feeling fitter and weight loss). Moreover, men who worked in environments where they were able to continually increase their step targets and effectively achieve their PA goals and more likely to satisfy their feelings of competence. For example, Frank, Michael, Calum and Ryan found increasing their activity levels to be an optimally challenging experience and appeared to work in jobs which perhaps offered greater opportunity or flexibility with regards to increasing their PA (see Table 4, pp. 88-89). Importantly, all of these men successfully achieved 5% weight loss during the 12-week programme.

However, it is important to highlight that some men were able to successfully overcome similar challenges associated with increasing their activity levels. For example, Gary appeared determined to reach his step goals each week despite the working in a predominantly sedentary job (i.e. Bank Manager). In order to ensure he reached his PA targets, Gary incorporated various strategies to increase his daily step count, such as going for walks during his lunch break and supplementing his activity levels by frequenting local gym facilities throughout the week. Thus, it is possible that some men were able to overcome wider structural constraints which some men perceived unassailable, ensuring they achieved their step based targets during the 12-week programme.

In summary, overall the pedometer was described as an effective piece of technology for increasing the men's PA levels, although a small minority of men expressed negative experiences of using the pedometers as their physical activity levels rose. These findings build on previous work (i.e. Hunt et al., 2013) and suggest that during the 12-week programme the pedometer was an extremely valued piece of technology. In general, the device empowered men by providing them with the ability to utilise and internalise self-regulatory processes. It was these aspects which were said to be particularly important to the men for increasing their PA levels, predominantly via walking and increasing their daily step count. In the next section of this chapter I describe how the setting provided

an important source of motivation for adopting the pedometer as a means of increasing activity levels during the 12-week programme.

5.5 The setting as a source of motivation for using the pedometer to increase activity levels during the 12 week programme

The men spoke about the importance of the setting (i.e. the professional football club) and the people within it, including other men perceived as being 'like them' and the community coaches; both were viewed as having an existing affiliation or loyalty to the football club. These aspects combined were instrumental in the men's initial engagement with the core aspects of the programme, particularly the pedometer-based walking programme. These factors, in turn, supported and helped the men to integrate the various skills necessary to increase their activity levels (i.e. effectively utilise the pedometer) and lose weight during and after the 12-week programme. The professional football club setting was described by the men as being an extremely important motivating factor as it provided the men with an opportunity to engage with a weight loss/healthy-living programme that felt right for them:

I've been very explicit that part of the success is the information [...] well some of the information that I got - but actually the context in which I got it [...] I've discussed it wi' [with] my partner [...] to the point where I was boring her, she's not particularly interested in [club01] or football so some of the, you know, the benefits of doing the FFIT programme at a club that you have some allegiance to, maybe I would concentrate on that bit [...] if I hadn't lost weight they [other people] might wonder how successful a programme it was, but because they could see "well actually you're doing this..." The way I described [...] it was based around football which had a currency, especially wi' [with] men. It had an allegiance you know and they could see why going to Parkhead or Ibrox I suppose, or anywhere else was important you know. [...] the added benefit for me for example at [club01] Park was that I was in the same gym as some of the you know football players that I looked up to and admired you know many years ago at [club01] so there was an added attachment for me in the process. The fact that it also did what it set out to do which was lose weight and feel healthier [...] I wouldn't go to a Weight Watchers group in a community centre you know, I would never have done that and wouldn't do it now but the context in which the course was presented and the location were key factors [...]. (Frank, age 49, BMI: obesity class II)

As Hunt et al (2014a, 2013) demonstrated, the men in the current study similarly felt motivated to take part in the programme because it was something they wanted to do, within a setting they valued and felt inspired by, as opposed to doing something they felt they ought, or were expected, to do. The professional football club setting provided a '*currency*' which the men felt others understood and meant they did not have to overly justify or substantiate their reasons for adopting the various components of the programme. The setting afforded the men privileged access to a valued domain which reinforced their identities, whilst simultaneously enabling them to comfortably adopt and integrate the key messages and skills necessary to successfully implement lifestyle changes (e.g. effective utilisation of the pedometer to increase their activity levels). These findings are consistent with previous research (i.e. Gray et al., 2013a, 2013b, Hunt et al., 2013, 2014a, Wyke et al., 2015) and highlight the importance of the programme being situated within a valorised masculinised domain thus strengthening the men's identities, while concurrently enabling them to actively take an interest in their health and integrate a repertoire of health behaviours within their underlying sense of self.

These findings are also consistent with SDT, according to which, people are more likely to initially engage in an externally prompted activity they view as being endorsed by an important reference group (e.g. a peer group, society or culture) which they feel or desire to feel connected to (Ryan and Deci, 2000b). Therefore, the internalisation of the men's drive to increase their activity levels (i.e. by adopting the pedometer as a self-monitoring tool) was potentially facilitated by their eagerness to feel related or connected to the professional football club they were devoted to and which they viewed as being responsible for endorsing and promoting the various components of FFIT (i.e. the pedometer-based walking programme). Next, I discuss the influence of other people as a source of motivation for using the pedometer during the programme.

5.6 The influence of other people as a source of motivation for using the pedometer during the 12-week programme

Some men spoke explicitly about the importance of being perceived by other men on the programme as able to keep up with their PA goals; they seemed to feel accountable to other group members. For these men reaching their step-based targets, combined with a perceived need or desire to report back to the rest of the group, was described as motivating. For example, Thomas mentioned:

[...] you were given, obviously, targets every week, to achieve a daily step-count. And since you had that target, it kind of spurred you on a little bit, every day or every week, to make sure you reached, or exceeded that target. And I think, again, going back to a kind of stereotypical man, I think it's [...] you know a bit of competition there to make sure you're not the one in the group that doesn't reach the weekly target. You know, you want to do well for yourself, but you also want to kind of prove to the group that you are [...] doing what you're meant to. (Thomas, age 37, BMI: overweight)

Thomas wanted 'to do well' for himself but at the same time did not want to be perceived by other men on the programme as failing to reach his PA targets and therefore letting the rest of the group down. Similarly while Tim said he regarded the pedometer as being 'invaluable' in making sure that he was achieving his PA targets, the most motivational aspect of the programme, in relation to increasing his activity levels, was attending the weekly sessions at the football club and interacting with the other men in the group:

I suppose, the pedometer, it would be the most useful thing. [...] but in terms of, for me, what was the most useful thing, if you like, that meant that I increased my exercise wasn't the pedometer, it was just the process and the weekly kind of get-together, as a whole - that kinda camaraderie was probably the most helpful thing to me. But, in terms of monitoring and keeping a track, then certainly the pedometer was invaluable in terms of, you know, giving you that easy means of checking what your activity had been for a day [...]. (Tim, age 33, BMI: obesity class I)

Congruent with SDT, the men reported being motivated to self-monitor and report back to the group their progress in order to demonstrate their ability to achieve their step-based goals and receive positive feedback from the group (which would increase feelings of competence), as well as to feel connected (i.e. relatedness) to

a group they valued. For these men the needs for relatedness and competence appear to be supported within the context of the group setting. Competence is the need to feel efficacious with regards to one's skills and be optimally challenged through behaviours performed within one's environment (Deci and Ryan, 2002). Supports for competence from significant others, such as optimal challenge or positive feedback can facilitate internalisation and more self-determined motivation (Ryan et al., 2009). As discussed earlier, people are also more likely to initially engage in an externally prompted activity they view as being endorsed by others (e.g. a peer group) they feel or desire to feel related or connected to (Ryan and Deci, 2000b). Consistent with SDT, then, some men began to internalise the regulation or value underpinning their behaviour. Thus, their motivation had become partially internalised but remained reliant on the external recognition and comparison with the rest of the group (i.e. perceived need to be seen by others as achieving their step-based targets). These accounts are consistent with what SDT defines as 'introjected regulation' (i.e. partially internalised regulation). Some men appear to have been motivated to use the pedometer and adhere to the walking programme by a desire or need to report back to the group in order to avoid guilt (i.e. letting the group down) or maintain feelings of pride (i.e. being seen by others in the group as being able to achieve their step-based targets).

The weekly group sessions were also very important in providing a source of continued inspiration and support to the men, particularly in respect to overcoming specific barriers or problems they might have experienced attempting to integrate changes into their daily lives. For example, Ryan (age 54, BMI: obesity class III) said: "you felt part o' [of] a group that were willing tae [to], basically as a football club, as a team [...] I felt a lot more confident within myself" (Ryan, age 54, BMI: obesity class III). Another important source of motivation came from the community coaches and the invaluable support they provided throughout the programme. Some men were explicit about how important the club coaches were with regards to providing non-judgemental and positive feedback each week. This was essential with regards to making the men feel supported, especially when things were not going as well as some men had hoped (e.g. inability to reach their

step-based targets) and motivated them to persevere with their self-monitoring efforts each week:

I think they're [the coaches] particularly worth praising because they managed to, certainly I felt that every week you were getting real positive feedback regardless whether [...] you hadn't lost anything or you'd lost ten pounds; they seemed to make you feel [...] as if their comments were specifically directed to me and I wasn't fearful of getting you know feedback. I was actually looking forward to getting it because if you hadn't [...] I didn't maintain the same weight between one class and the next and the person who was giving me feedback was kinda' saying "well let's look at why that might be," so it was a prompt to have a bit of discussion [...] it wasn't just "oh you did it or you didn't do it," it was "well that's good, what have you done to lose that weight? Have you met your step count," or "did you get your steps done this week because you know, you've not lost weight?" [...] "were you not well?" So there was some examination of why things had been successful or not. (Frank, age 49, BMI: obesity class II)

Therefore, the coaches helped to create an autonomy supportive environment which took the men's individual perspectives into account and helped promote feelings of competence by giving positive feedback and helping the men overcome setbacks or barriers by providing practical support and advice.

The environment fostered at the weekly club sessions provided an atmosphere which enabled the men to acquire the necessary skills to self-monitor their PA levels and achieve their desired PA and weight loss goals. This, in turn, prompted them to sustain their efforts with regards to achieving their PA goals and was crucial to the internalisation of these skills:

I think just the discipline of the programme, it gave me ten or twelve weeks of discipline in order to pin the changes to. I think if I wasn't, if I didn't have the structure of the step count, and I didn't have the structure of going every week and seeing the rest of your peer group and everyone on the group, in the group, it would have been a lot harder to make those changes. So I think the programme itself, what the structure of the programme gave me, was the thing that allowed me to make the change then maintain it, and then for it to become part of my life. (Ben, age 36, BMI: obesity I)

Therefore, both the perceived support from other men on the programme, who were perceived as going through a similar/shared experience, and the community

club coaches during the 12-week programme, were vital in providing the necessary ‘motivational climate’ in which the men could internalise the changes. The weekly sessions during the 12-week programme provided an optimal level of support that enabled the men to get into the habit of self-monitoring their activity levels with the pedometer and implement other important changes to their lifestyles. In the next section I discuss in detail the role of the pedometer in men’s lives after participating in the 12-week FFIT programme.

5.7 Role of the pedometer in men’s lives after the 12-week programme

Some men continued to use the pedometer after taking part in the 12-week programme. For others it served as a trigger for them to adopt more advanced and sophisticated technologies which enabled them to continue self-monitoring their activity levels after the programme. However, for some men the pedometer was no longer as useful to them as a motivational tool after the 12-week programme had ended. In this section I will begin by outlining the ways in which the men spoke using the pedometer as a self-monitoring tool after the programme. I will then discuss how some men progressed onto to using more advanced self-tracking technologies. In the following section I will consider the reasons why the pedometer was no longer as useful to some men after the 12-week programme had ceased. It is important to make clear that the groupings outlined in the following sections are not mutually exclusive.

5.7.1 Continuing self-monitoring technologies to support PA

Several of the men reported continuing to use the pedometer to monitor their activity levels regularly or intermittently after they had completed the 12-week programme. Some saw wearing the pedometer post-programme as a means of continuing to self-monitor their activity levels and to ensure they were continuing to maintain their activity levels (Section 1, Table 7, p. 163).

These men continued to self-monitor their activity with the pedometer but described becoming less focused on achieving their PA goals (i.e. step-based targets) and more inspired to continue their active lifestyles as a result of the

tangible rewards attributed to being physically active (e.g. feeling fitter). The tangible rewards associated with walking (e.g. the social aspect of meeting people, being able to listen to music, having more 'energy') transcended the enjoyment associated with achieving their step-based goals and were cited as reasons for becoming less reliant on the pedometer as their primary source of motivation (Section 2, Table 7, pp. 163-164). Therefore, for these men the pedometer continued to be a useful technology which enabled them to self-monitor and maintain their activity levels once the programme had ended, which was said to be satisfying (i.e. providing feedback on steps performed and reaffirming competence). However, they had also developed a real enjoyment of the activities and were motivated to maintaining their activity levels because of this as well as the tangible benefits attributed to living a more active lifestyle (e.g. weight loss, enhanced wellbeing and meeting people).

However, some of the men no longer felt they needed to use the pedometer as frequently as a means of verifying their activity levels and felt they had developed an internal sense of their activity levels:

[...] I almost didn't have to rely on the pedometer to know how many steps I was taking [...] I quickly worked out, in a ten minute walk, about how many steps that was or how many steps I'm taking if I go for, you know, whatever length of walk that I might go for. (Tim, age 33, BMI: obesity class I)

A few described having internalised some useful benchmarks for their PA; they had gained a greater insight into which routes or time spent walking would enable them to accumulate their step-based targets and fulfil their activity goals, without relying on the pedometer feedback as they had done during the programme. Some said they had since integrated their own exercise routines into their daily lives to supplement their walking routines:

I've also kind of used the notion of maintaining [...] you know the weight and the fitness levels to kind of use, to have a regular exercise programme [...] some of which is based around walking, some of it's based around sports and some of it's based around I suppose, you know a kinda circuit/boxercise type class in the house that I do myself. You know I

kinda just get up a wee bit earlier to do that hour session before I you know, go out or go to work. (Frank, age 49, BMI: obesity class II)

It is important to note that although these men did not have the same perceived need to use the pedometer as frequently they still enjoyed using it occasionally to track their activity levels along with other forms of self-monitoring technology.

For some men the pedometer functioned as a first step towards using more sophisticated '*self-tracking*' technologies. These men remained reliant on some form of quantification and described the use of objective technology as something they enjoyed. After the 12-week programme several men said they had since acquired more sophisticated pedometers or progressed to using more advanced forms of technology (e.g. smart phone applications [apps] and mobile devices) to monitor their activity levels. For example, George (age 56, obesity II) bought another pedometer with advanced capabilities which he used in conjunction with the original pedometer depending on how he felt:

I actually bought one which was a more sophisticated one for calories and distance travelled and things like that. So, I do tend to, when I've got my serious head on and I really want to be serious, to see how many calories I've burnt up and how many metres I've travelled, but if I just want to do what I would call "my old fashioned type pedometer" I just wear the one you gave me. (George, age 56, BMI: obesity class II)

Similarly, Matthew mentioned that he had purchased a more complex pedometer which he used more for surveillance of his activity levels than as a motivational tool:

CD: Do you still find the pedometer helpful Matthew?

Matthew: Not to the extent where it did before, now it just gives me an idea of how many steps I'm walking. I mean I actually went out and bought me own one that told me different things, calories I'm burning, length and everything else. So, as a motivation no I wouldn't say that now. As a reminder what I'm actually doing, yes. (Matthew, age 47, BMI: obesity class III)

Some men were more enthusiastic and explicit about their feelings of satisfaction associated with their use of more sophisticated self-tracking technology after the

12-week programme. For example, Jamie (age 36, BMI: obesity class I) said “I’ve now got an app on my phone [...] it is extremely helpful and it’s something I use every day, as much as I possibly can.” Similarly, Tim mentioned:

I quite like my technology, so I use an app called Map My Run on my smartphone, and that, you know, that uses GPS [Global Positioning System] and, indeed, I think, mobile signals too, when you set it to go - and off you start running or, indeed, cycling. You know, it literally tracks you, exactly where you are, how fast you’re going, how much of an incline or, you know, up and down you’re going for wherever the route that you’re going for. And, at the end of it, you press stop, much as you do on a stopwatch, and it gives you a kind of full readout of your workout and if you’ve, depending which one you’re using, you can go online and, you know, it’ll show you the map of the route that you’ve just ran. And if you’re so inclined - and I’m not - you can post that on Facebook or wherever else, to tell your pals that this is where I’ve just been, or tell them to avoid it [...] it’s just an extension of the likes of a pedometer. [...] and it allows you to kind of map that, and your progress, week on week. You’re going a bit further, you’re going a bit faster or whatever [...] where the programme really helped was [...] getting you into a cycle of, you know, recording and monitoring and actually seeing progress. (Tim, age 33, BMI: obesity class I)

Thus, several men continued to maintain their habit of externally self-monitoring their activity levels with technology after the 12-week programme had ended. For these men, the pedometer functioned as a first step towards using more sophisticated forms of self-tracking. Whilst initially the pedometer was just a motivating technology it prompted some men to utilise technology capable of providing more comprehensive and detailed feedback on a variety of activity and fitness-related metrics (e.g. time, distance travelled and energy expenditure). Similarly to the pedometer, the feedback provided by these more advanced pieces of technology appealed to the men by giving them further insights into their own PA behaviour and was described as being interesting and motivating.

Hence, these men were still reliant on quantification but described using more complex technology as something they enjoyed doing which provided them with self-defined targets and goals against which they could track their progress, whilst performing more vigorous activities. Therefore, these men could not be considered ‘ultimately internalised’ as they are not intrinsically driven by the desire to sustain their activity levels alone but instead intrinsically motivated to

continue their active lifestyles as a result of the enjoyment associated with self-tracking.

Table 7 Continuing use of the pedometer post-programme

	Verbatim quotes
Men's continued use of the pedometer post-programme as a tool for self-monitoring Section 1	<p>I still wear it [pedometer] and that's been months now since I finished the programme, I still use it. (Frank, age 49, BMI: obesity class II)</p> <p>I find it helpful because it's something that I compare to what I was doing in January, February, March when I was [...] always surrounded by other people who were comparing their results and going "did you manage to do this?" Now, you know, we do meet up but it's maybe only once every couple of months now for a game of football or going along to some of the training sessions so when you've not got that week on week you do need something to refer to and, in my case, I refer to the pedometer. (Gary, age 50, BMI: obesity class I)</p> <p>Yes but not in the same way, whereas previously the pedometer was, yeah, it was a motivating thing. It was the stick that I controlled myself and motivated myself to go and do it, whereas now, yeah, it's a useful function as a tool so when I am out walking it's a way of judging how much walking I am actually doing and sort of measuring my activity [...] it's useful but not in the same way that it was [...] while I was on the programme. (Ben, age 36, BMI: obesity class I)</p>
Men's continued enjoyment of wearing the pedometer as a motivational tool post-programme Section 2	<p>At the start, I didnae, I was, I think, I didnae ha'e the energy, I didnae, what I used to think 'oh'. I had to actually force myself to do it when I started, but now, it's no' even a chore, it's just, "oh this is enjoyable". It's about, now I've just got a bit of energy, I'm just, "let's just go, let's do it" [...] that was where the wee monitor [pedometer] did come in handy, you were looking at it, "oh I need to do mair steps, I need to do mair steps, I need to do mair steps" just force that into your head [...]. Before you realised it, you were like that, "oh I'm enjoying this". And you were just listening to your music goin', doin' the walkin' [...] you're forgetting about how many times you went around, and you were just listening, and you were just, you ended up actually seein' people, you start speaking to people, you were more "hello, how are you, is that you ta'kin' your</p>

	<p>dog for a walk?” [...] It was just brilliant, you just thought, but at the start, you did have to actually pick yourself up and force yourself, and the wee monitor did help ye, because ye just looked at that and ye went, “oh no, I need to dae mair steps” [...]. Yeah, still find, I love my pedometer, I think it does a lot of good [...]. (Calum, age 38, BMI: obesity class II)</p> <p>[...] it makes you feel better [...] as your step counts goes up and you try and increase it [...] to make you kinda go and do it, rather than just sit, sit on the couch [...] you can just go out and have a wee walk for half an hour or so, you know? [...] I’m in the culture noo [now] [...] I’m still doing about ten mile a day. [...] It definitely helps, tae [to] have a pedometer on and going out and enjoying a walk and get a bit o’ [of] fresh air [...] just knowing that it’s there and it’s recording every step. I think if you didnae’ have one you wouldnae’ feel as motivated, you know? I think it’s a good motivation tool [...] it’s actually recording, you can see what you’re actually achieving [...] it’s good for your confidence and knowing that every [...] goal you achieve, and it definitely makes you feel better [...] [I] make a point of walking every day. [...] I’m thoroughly enjoying it [...] you look forward tae [to] going for it now [...] I definitely feel a lot healthier now than I did last year before I started this programme [...] just being oot [out] in the fresh air and meeting people [...] it’s great for your wellbeing. (David, age 49, BMI: overweight)</p>
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5.7.2 Men who did not continue to use the pedometer

Detailed analyses revealed two main reasons why some men no longer felt the need or desire to use the pedometer. These reasons can be summarised as ‘ultimately internalised’ and ‘controlled regulation’ and are discussed in turn below. It is important to make clear that these groupings are not mutually exclusive.

5.7.2.1 Ultimately internalised

Men classified as ‘ultimately internalised’ no longer felt the need to use the pedometer; they had redefined themselves by integrating new-found pursuits into their daily routines described as something they enjoyed doing (i.e. intrinsically motivated). They no longer felt the need to self-monitor their activity levels to the same extent. Some said they had replaced their walking routines and use of the pedometer with more vigorous forms of exercise, as a consequence of the increased fitness levels and/or weight loss they had achieved:

I don’t use it [the pedometer] at all now, but then I’m going training two nights, you know Monday and Wednesday I go to that thing, I haven’t been doing as much walking, but then I’m getting that physical exercise, I mean it’s an hour and a half, you know, and it’s an hour and a half of exercise split into kind of three half hours, so I know [...] I’m getting the exercise that I need. (Michael, age 55, BMI: overweight)

Many described feeling an increased sense of vitality, both through their physical bodies (e.g. feeling healthier and fitter) and psychologically (e.g. greater confidence and wellbeing), which, in turn, motivated them to sustain their lifestyle changes after completing the programme:

I feel different, my asthma feels different, I’m no’ so chesty all the time, and my clothes fit better and like I say, I’ve lost the inches and I know I have and I feel so good about myself now, and I’m just gonnae continue doin’ that. (Calum, age 38, BMI: obesity class II)

Just the feeling of losing the weight and having the shirts and actually seeing myself as being a wee bit faster when I’m playing seven-a-sides and taking up running and [...] just changing my overall kinda well-being. Just

feeling better about yourself I suppose. (Steven, age 33, BMI: obesity class II)

Consistent with previous findings (Hunt et al., 2013), the benefits of becoming fitter were realised whilst performing valued activities (e.g. running faster while playing football) and were likened to being able to recapture a youthful energy which they had thought was unattainable and had been lost as a consequence of ageing, low levels of fitness and/or functional impairment (due to weight gain etc.). Therefore, for some men becoming more active made them feel young again and they described a new or renewed sense of self. The various benefits they had experienced as a result of the changes they had made to their lifestyles, both during and after completing the 12-week programme, were described as being some of the most important motivating reasons for wanting to continue their efforts after the 12-week programme had ceased:

I'm actually sleeping better. I do go for a full night's sleep. Before I used to just only get by on like four and five hours of sleep [...] I get my bloods done all [the] time. Because I was on high blood pressure tablets [...] I got my last reading that's when the doctor says "well there's no need for you to be on the tablets any more", ken. "Everything's fine." [...] There's no way I'm going back tae the way I was, if you know what I mean. There's no way I'm going back tae being overweight and inactive and unhealthy and, 'cause at the end of the day you've only got one life so you've gotta make it as long as possible. [...] I think as long as I can keep them up I feel, again, I feel great within myself. My moods are different, my wife goes on about the sex life's a lot better [...] there was nothing wrong wi' [with] it before but she says it's just mind blowing now, know what I mean? [...] More energy, want to go out and about and spending more time wi' my kids 'cause [...] I used to say "oh there's a game o' [of] football coming on I wantae watch" or [...] I think it's gonna rain or something". [...] now [...] it's me that's dragging them out, ken, "come on we'll go to the park, come on we'll go for a walk." (Martin, age 34, BMI: obesity class III)

The majority of these men described being able to perform many valued activities again congruent with aspects of their identities which were important to them, such as spending more time with their children or grandchildren, which inspired them to maintain their efforts.

Several men perceived themselves as having more freedom and options in relation to the kinds of activity they felt capable of since completing the programme.

These men felt inspired to take up new sporting activities or hobbies (such as, hiking or cycling) as a result of their 'fitter' and better functioning bodies, which they would never have thought possible prior to taking part in the programme. These activities were described as inherently enjoyable, exciting and gave the men a new found sense of autonomy:

I've now bought a bike so I'm doin' more cycling [...] I'd never o' [of] done at the start o' [of] the course, I would've been too embarrassed. They'd be like that, "look at that big fat blob on that bike, what's he doin'?" But I've never had any comments like that about me [...] I've got a new freedom I can go oot [out] on ma bike say, "I'm gonnae set a target and go here," and I go, it might take me two hours to get somewhere but I do it ... which was never, never done before in ma life [...] it sounds daft but I actually enjoy goin' oot cycling I never thought I would [...] it's just the, the freedom. I still go out walks, I go out walks every day but [...] I go out on ma bike and I find that [...] I can reach somewhere quicker [...]. It opens up sorta different areas to me whereas I, I don't want ma walks to become repetitive. Whereas the bike I can decide, "right, I'll go here, I'll go there ..." and I'm enjoying that. (Ryan, age 54, BMI: obesity class III)

Some men described redefining themselves in terms of integrating new found pursuits into their daily routines which they described as becoming a "passion". These men explicitly said that it was being able to self-monitor their activity with the pedometer to achieve their activity goals which was the initial catalyst that enabled this longer term change, not just in their activity levels but also their identity:

At first I was walking to work but getting a lift home or else getting a lift in and walking home. But by the end of the, by the end of the course like I was, I was running, I was jogging, I was cycling, I was walking, I was doing cross-country [...] by being able to measure and try and beat the previous day's measurements [...] I started off, I was only walking in one direction. And by the end of the programme I actually ran the Edinburgh Marathon earlier on this year. [...] I would say that that was just started with using the pedometer and walking as part of the programme. Like without that I wouldn't have, I wouldn't have done a marathon [...] my physical fitness improved and sort of spurred me on to do more and more. And actually like came to really, really enjoy it. And it's become a sort of passion of mine now [...] I mean I'm running 3, 4 times a week. I'm cycling. [...] it's just something that's y'know I've sort o' really, really enjoy. And feel more able to do it now [...] I'm a lot fitter now so it's less of a, a chore. And sort of the more I do it the easier it becomes, the better I become at it, the more I want to do it. So it's just like a circle. Or a cycle. (Laughs)

And yes, it's just, I mean I just love it. I've done maybe half a dozen half marathons and different runs and cycling sort o' fair distances. [...] It's just, it's absolutely brilliant. And I, I feel so much fitter and healthier. (Jeffrey, age 53, BMI: obesity class I)

I do something almost every day now, ken. Sunday, as I say, I go to body pump [...] Monday I'm at the gym. Tuesday I maybe go and do some weights on a Tuesday. Wednesday I maybe go to body pump again then I have like a day off sort of thing, then, but I do have like my own walks, ken know what I mean. Just, ken, going for a walk in between any days I've had off. So I'm always something either every second day or every day if you know what I mean. (Martin, age 34, BMI: obesity class III)

Most of these men said they no longer felt the need to use the pedometer. However, some explicitly stated that the pedometer had been instrumental in the early phases of the programme in enabling them to experience the tangible benefits of becoming active (i.e. feeling fitter/weight loss). These, in turn, had motivated them to persevere further and develop more internalised forms of self-regulation. Consistent with SDT, these accounts suggest the men had successfully assimilated and integrated their new behaviours with their identities and values. Since taking part in the programme they had enjoyed performing activities which they found satisfying and intrinsically rewarding and thus autonomously motivating. Some men had supplemented their walking with other forms of PA and exercise which they enjoyed. Men also mentioned the experiential vitality experienced as a result of becoming fitter and being able to perform new activities which they found novel, invigorating and exciting.

According to Ryan and Deci (2008), vitality refers to the energy available to the self and is a powerful indicator of health and motivation. Alternative models of self-regulation (e.g. Baumeister et al., 2007, Baumeister and Vohs, 2007) suggest mechanisms through which energy resources related to self-regulation and motivation can be depleted. For example, the strength model of self-control (Baumeister et al., 2007) views energy available for self-regulation as a finite resource that operates akin to a muscle and can become fatigued after repeated use requiring rest before it can operate to full capacity. This process is defined as 'ego-depletion' whereby volitional processes, including self-control utilise scarce

psychological resources leading to short-term impairments in self-regulation (Baumeister et al., 2007).

In contrast, the SDT model of vitality argues that while endeavours to control one's behaviour lead to depleted psychological energy and vitality, autonomous forms of self-regulation do not lead to ego depletion (Ryan and Deci, 2008). Ryan and Deci argue that autonomous activities are performed with a full sense of endorsement or choice and are associated with less inhibition and pressure which, in turn, are less diminishing of energy resources. Conversely, behaviours that are motivated by more controlling forms of behavioural regulation are associated with pressure and greater utilisation of psychological resources. Moreover, in accordance with the SDT model of vitality, behaviours that satisfy the basic needs for autonomy, competence and relatedness sustain or increase energy and vitality, whereas activities or events that frustrate these needs are thought to deplete energy (Ryan and Deci, 2008).

Therefore, the men above who described being able to successfully perform new intrinsically fulfilling activities, often alongside their loved ones or family members, appeared to satisfy their basic needs for autonomy, competence and relatedness, which, in turn, enhanced feelings of aliveness and vitality. These men's accounts are consistent with the SDT model of vitality suggesting that as their motivations became internalised they experienced greater feelings of vitality which, in turn, facilitated sustained behavioural change.

5.7.2.2 Controlled regulation

Men classified as having 'controlled regulation' reported not having the same levels of motivation to maintain their activity levels or continue to use the pedometer once the 12-week programme had ended because they no longer had the same levels of peer support available to them which was provided by the weekly sessions at the club whilst on the programme. These were more likely to be the men who had said they were motivated extrinsically whilst on the 12-week programme, with regards to feeling like were reporting their activity levels back to the group rather than increasing their activity levels solely for themselves. For

these men, then, the social support within the programme appeared to be more important than having a technology for self-monitoring. These men were also less likely to have achieved their 5% weight loss goal post-programme:

CD: Since you completed the programme, have you managed to stick to your physical activity goals or recommendations?

James: No, to be honest wi' you. And I think that's part o' the problem [...] I think the support of the coaches plus also the support o' the other people on the course and stuff like that was helpful and that kind of helped motivate [...] me tae make the changes. I think once that [...] there was talk o' that we would still meet for five-a-side and things like that, but wi' other commitments and things like that, it just kind of falls by the wayside [...] if anything, my activity levels have decreased since I've finished the programme. But I think that's more to dae wi' what I was saying earlier about the lack o' peer support, you know - the fact that once that's away then it's more difficult to maybe maintain it. Plus, you know, life circumstances, life events, maybe sometimes mean that you don't do as much exercise as you'd like to [...].

CD: And how important do you feel that the peer support was in making changes?

James: Very important, I think. Because I think that was a crucial factor, tae know that other people were doing it and other people were going through it [...]. And that if at the end of a session you were being weighed then you didnae' want tae look, you know, to have put weight on - you wanted tae have shown that you were committed to it, you know. (James, age 42, BMI: obesity class I)

Similarly, Steven said he had no impetus to wear the pedometer once the 12-week component of the programme had ended, which resulted in him getting out of the habit of using it:

When I was doing it—when I were doing the course it was just, it was something you did I suppose. But, I've got no... no overriding reason to be wearing it [...] It was just from falling out of habit. (Steven, age 33, BMI: obesity class II)

Thomas also described no longer using his pedometer to monitor his activity levels as a consequence of getting out of the habit, which he attributed to various personal circumstances or life events (e.g. going on holiday and starting a new job). Consistent with both James and Steven, Thomas also stated that he had

struggled to maintain the same level of motivation to sustain his activity levels once the programme had finished and he no longer had the same level of perceived support. He felt that he needed the ongoing support from others by having the weekly group sessions. After completing the programme several of the men had developed different ways of measuring their activity levels. The habit of self-regulating and monitoring their activity levels had been maintained and internalised, however, the mechanism and tools for self-monitoring had been adapted so they no longer had to rely on the pedometer to verify whether or not they had achieved their activity-based goals to motivate him to maintain his lifestyle changes. Thomas said he was particularly motivated by not wanting to feel disappointed if he had put weight on or had not managed to lose weight each week:

Thomas: [...] I've not used it [the pedometer] for maybe three or four months now. I went through a - we were on holiday abroad, and we came back and I changed jobs, and everything was up the air. So, I didn't take it on holiday with me, and when I came back it kind of almost went out of my head to keep putting it on. So probably for the past four months, or five months, I've not been using it [...] I think I just got out of the habit of putting it on every morning. Obviously, during the FFIT programme and in the months after the FFIT programme, it became second nature [...] I've now got into the habit of not putting it on every day [...].

CD: Since you completed the programme, have you managed to stick to your physical activity goals, or recommendations?

Thomas: I have lapses now and again, for maybe a week or so. And I joined - my wife joined Weight Watchers, and I joined that as well, and I actually found that very helpful, and beneficial. Because [...] during the 12 weeks of the FFIT programme, since you had something to go back to, and weigh yourself every week, and speak to people, it was a, you know - it kept you going, it gave you a goal at the end of each week. And you kind of knew, if you had a bad weekend, if you went out for a few drinks, or had a takeaway, or whatever it might be, that your weight might not be as good as you would like it to be, when you went back to the FFIT programme [...] it gave you a little bit of a kick up the bum [...] a bit of motivation to do better the following week [...] when the FFIT programme came to an end, you kind of lost that little bit of, you know, motivation. Because you didn't, you didn't have something to go back to every week, and something to weigh. You could obviously do it yourself, but it's not quite the same [...] what I've found by going to Weight Watchers, since that's a weekly, obviously, class, that's given me my little motivation back, that, you know, I feel disappointed if I've put on a bit of weight, or

if I've not lost even at least a pound every so often. So I think having that weekly get-together, from my own personal experience, regardless of if it's FFIT programme, or Weight Watchers, or even meeting up with some of the guys from the programme and just doing it yourselves, I think that would, is quite a good thing to have. (Thomas, age 37, BMI: overweight)

Thus, some men reported being less motivated to maintain their activity levels and continue to use the pedometer as a motivational and self-monitoring tool once the 12-week programme had ended. For these men the pedometer had been useful but *only within the context of the programme* (i.e. the usefulness of the pedometer as a technology for self-monitoring was entirely bound to the social context). For these men some form of peer support was essential. This described a lack of drive or impetus to continue their activity levels without access to the same levels of inspiration created by the 12-week programme as they had not sufficiently internalised their desire to continue to regulate their efforts in the absence of the group context.

Congruent with SDT, the process of internalisation requires fulfilment of the basic needs of autonomy, relatedness and competence. For these men the relatedness support afforded by the other men on the programme and by the coaches at the weekly group sessions, was of over-riding importance. Thus were unable to move beyond controlled motivation (i.e. external or introjected regulation) and fully internalise their motivation to continue their activity levels once the 12-week programme had ceased. In the next section of this chapter I discuss differences between the accounts of men who achieved and did not achieve their 5% weight loss target over the 12-week programme in relation to their experiences of wearing the pedometer to self-monitor PA post-programme.

5.8 Experiences of wearing the pedometer to self-monitor PA: differences between the accounts of those who achieved and did not achieve their 5% weight loss target at 12 weeks

As described in the methods chapter, across the main themes and groupings I conducted systematic comparisons between the accounts of men who achieved and did not achieve their 5% weight loss, to identify any differences in the language

and responses between these two distinct sub-groups (see Figure 8, p. 177. for an example of the framework matrix developed during my analysis).

I found that men who achieved the greatest weight loss at the 12-week follow-up (i.e. at least 5% weight loss) were those who spoke more explicitly about the various benefits associated with being more active and losing weight and also spoke about being able to perform valued activities and feeling better within themselves (i.e. autonomously motivated). These men also were more likely to report continuing to use either the pedometer or more sophisticated technology or alternatively described taking up other forms of activity which they had embraced and integrated into their lifestyles.

In contrast, I found that men who did not achieve their 5% weight loss target at 12-week follow-up were more likely to report particularly negative experiences with using the pedometer during the programme; it could be that for these men the lack of feelings of self-achievement and satisfaction meant they felt negative towards the programme and more likely to criticise the technologies on offer. These men were also more likely to report finding it more difficult to motivate themselves to sustain their activity levels post-programme and were more critical of the pedometers usefulness; they explained their lack of success by recounting the problems they faced over which they had little control. These men were also more likely to have discussed the great importance of peer support to keep them motivated during the programme.

5.9 Summary

In this chapter I have reported how men spoke about using the pedometer both during and after taking part in the 12-week component of the FFIT programme. The findings reported in this chapter contribute to current understandings of the ways in which pedometers can function as motivational tools to facilitate internalisation of PA self-regulation.

The men spoke about how they valued walking as an accessible form PA for meeting their moderate-intensity PA goals. Generally, the pedometer was viewed

by the men as non-intrusive, easy to use and reported few negative issues as a consequence of wearing it. During the 12-week programme the pedometer was described as an integral element of the programme allowing the men to accurately track their PA levels via the number of steps performed. Being able to visually see their activity levels via the objective feedback from the pedometer was important as indicated achievement of their step-based goals. This, in turn, enhanced feelings of satisfaction and enjoyment which motivated the men to increase their PA targets further throughout the programme. The men spoke about the importance of the setting (i.e. the professional football club) and the people within it (i.e. other men 'like them' and the community coaches) in motivating their initial engagement with the programme content, specifically the pedometer-based walking programme. These factors contributed to the internalisation of the men's motivation to adopt the pedometer as a means of increasing their activity levels and losing weight during and after the 12-week programme.

Congruent with SDT, self-monitoring using a pedometer could promote autonomous motivation for engaging in PA that extended beyond taking part in the 12-week programme. Men who were successful in achieving behaviour change were more likely to report continuing to use either the pedometer or more sophisticated technology for self-monitoring, through the pure enjoyment of the tangible evidence it provided on success and achievement (i.e. Continuing self-monitoring technologies to support PA) (see Figure 7, p. 176). Alternatively, some of these men described taking up other forms of valued activity which they had embraced and integrated into their lifestyles and therefore no longer relied on the pedometer (i.e. Autonomous regulation) (see Figure 7, p. 176). These men were more likely to explicitly discuss the benefits of living a more active lifestyle, losing weight and feeling better within themselves. They appeared to have internalised their motivation for continuing PA through their satisfaction of the three basic needs as defined by the SDT framework (i.e. relatedness, competence and autonomy). However, for others the pedometer was not enough (i.e. Controlled regulation) (see Figure 7, p. 176). These men reported no longer continuing their activity levels or using technology to self-monitor PA, once the 12-week programme had ended. Changes they made seemed more reliant on external

influences, such as the football club setting and peer support. These men appeared unable to satisfy their basic needs for competence and autonomy during or after the 12-week programme and remained motivated predominantly by extrinsic factors. Moreover, none had achieved their 5% weight loss at 12-weeks.

Overall, SDT was a useful framework with which to understand the use of pedometers for both initiation and maintenance of changes in PA. The findings in this chapter expand on prior research demonstrating the acceptability and utility of pedometer-based walking programmes as acceptable weight management strategies for overweight or obese men (Hunt et al., 2013).

Basic Needs Defined by SDT

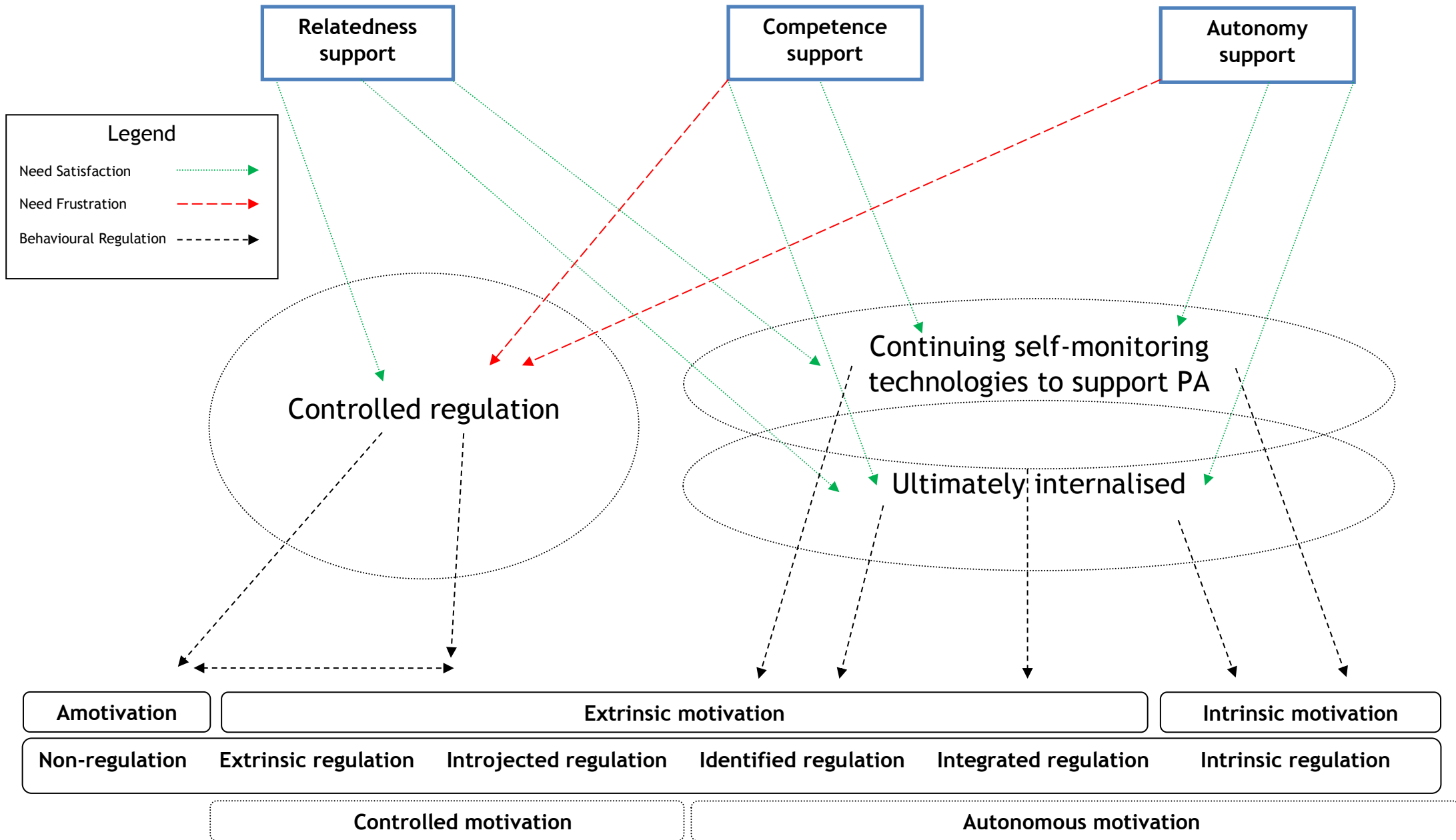


Figure 7 Continued increased PA and self-monitoring with technologies post-programme in relation to the SDT motivational continuum

Matrix experiences of using pedometer.xlsx - Microsoft Excel					
F1 1.5 Pedometer: Continued use of pedometer (beyond the 12-week programme)					
	A	D	E	F	G
1		1.3 Pedometer: feedback, goal setting & self-monitoring	C: 1.4 Pedometer: Motivator	1.5 Pedometer: Continued use of pedometer (beyond the 12-week programme)	1.6 Pedometer: s
1: 12004W		I felt as if at the end of the process, I think I said that to one of the coaches, that you felt you had a larger toolkit. So you had the motivation before perhaps but didn't have the toolkit, but at the end of that and during and at the end of the process you had a larger set of tools that you could draw upon to kind of do that. And I suppose one of the things that I'm just thinking about, because I still have a pedometer – I still use it – is that that was a way of you getting feedback on a daily basis in-between the you know, the cohort days. So you're looking at that pedometer going 'right, I should be doing another three thousand steps today, I need to go for a walk.' Or, you know... And that was, you know, at times I would go for a walk at lunchtime from work, specifically just to kind of do the exercise. You know, you would put a task at the end of that and like walk to the shop to get a roll as opposed to walk to the Gregg's to get a sausage roll. It was walk to the shops to get a roll which would be brown and a tin of sardines as opposed to you know a cheese roll with a bag of chips or you know whatever, something fattening. So the pedometer acted as a prompt that... And I think everyone said that on the cohort, that the pedometer was something that they used as a daily reminder that they had certain targets to achieve.	It's also something, a physical thing, to represent some of the changes that I've made as well as my clothes are different now and, it's just another thing to think 'that reminds me, even if I don't look at the steps it reminds me that I'm, I've got a different view about exercise now, I've got a different view about eating. It's almost like a totem in that respect.	Absolutely yeah; as I say, I've got another one and I've got spare batteries so... and if both of them, you know if I lost both of them or they got damaged or you know didn't work, I'd probably... I'm pretty certain that I would go out and just buy another one. So most days now I've kind of set a target of ten thousand steps most days. Well I try and do it every day, to get at least ten thousand and the days that I don't get it and if I don't think I'm gonnae get it, what I try and do then is 'ok well I need to do twenty minutes of strenuous exercise to make up for the fact I'm not gonnae do the distance.' So I use it everyday, it's very helpful and I actually went and got another pedometer for the day that this one stops working. You know I kinda, my friend had a few spare so I says 'look, give me... can I have one because I have got one.' I actually used the two of them for a while just to check if my readings were kind of correct and broadly they were, so I kind of trust it. It's maybe not the most accurate piece of equipment in the world but it gives me a real gauge of what I'm doing and you know	I've been sharing some of the mate FFIT, showing people the step count themselves. You know, 'buy your p that you could do and here's you know measuring what you're doing; try and being boastful, I was just saying "th I'm working with some young men i mental health difficulties but they're so we've been talking about some experience but also sharing the ma maybe think about change and the l change with some of the young me patient.
5% weight loss at 12-weeks = Yes Age = 49 BMI (Baseline) = 35.70		The unfortunate... if I was trying to... well, the first week that I wore it as part of getting your average step count, I was away on holiday and I was, during that holiday I was away somewhere so I was doing lots more exercise than I would do in relation at my job if I was back in Glasgow. So	As I've already kind of indicated, it was a bit of kinda prompt really... So it was always a bit of a prompt really to that end, that it was helpful information that I was getting. On one occasion I left it at a sporting venue and I wasnae at peace till the next day. It wasn't so much 'not buying another pedometer.' I had, I suppose, developed an attachment to the pedometer that I'd been given so the next day it took me a couple of hours to drive from where I was going back to my work, but I had to go and find the pedometer and I was really grateful that the pedometer was still in the same changing room in exactly the same position that I'd left it. So it was a big part of, I suppose, the daily motivation to do	And I suppose one of the things that I'm just thinking about, because I still have a pedometer – I still use it	No I didn't find any; a few people ini know it's... it is noticeable if people something you would normally wea actually added to the conversation you were wearing it. You know, "wel pedometer so..." and in terms of m kind of have a conversation and eq with patients that I've worked with pedometer, they're relatively cheap you're looking at losing weight. We conversation how this wee gadget
BMI Classification (WHO) = Obesity II		...ye knew how many steps ye were doing and actually wore it to my work and I done over, what was it, fifty six thousand steps, and that was just in one day, I was like that 'yes', I mean because I'm constantly on my feet all the time, as such that's all I am I'm walkin', liftin, walkin', liftin'. And I've noticed, and I've just started to wear it just once to my work just wanted to see how active I am, and I wrote it on my calendar, and everybody's like that 'really?' But that's how many steps I done in one day, I was non-stop, it would had to be one of my busiest days, and then even on my days off, I was wantin' to see the difference fae when I work to when I was actually my days off. I was actually quite surprised the big difference because on my days off I was actually doing less steps, and I was	At the start, I didnae, I was, I think, I didnae ha'e the energy, I didnae, what I used to think 'oh', I had to actually force myself to do it when I started, but now, it's no' even a chore, it's just, "oh this is enjoyable". It's about, now I've just got a bit of energy, I'm just, "let's just go, let's do it". And... but at that the time when you started the programme, it was, there was a barrier but you actually had to pick yourself up and actually do it, and that was where the wee monitor did come in handy, you were looking at it, 'oh I need to do main steps, I need to do main steps, I need to do main steps' just force that into your head, you had to go dae main steps, you had to. Before you realised it, you were like that, 'oh I'm realizing that. And you were just listening to your music, and you're	Yeah, still find, I love my pedometer, I think it does a lot of good, and that's why I say, I clear it every day, and I'll, I've no' put on the, I've no put it on coz I'm gonnae start work tomorrow, so I'm gonnae put it on for four days, but when I do go out for my walks I still see how many walked steps I do.	...you ended up actually seen' peop people, you were more "hello, how dog for a walk?" And you just start you carried on with your walkin'.
				Yeah. Well, well I don't do it when I work my four days, I used to go out at night, but I've actually, coz I've been really, really busy, I'm absolutely knackered when I come home. So it's usually when I'm four days off I usually do it.	

Figure 8 Screenshot of framework matrix: men's experiences of using the pedometer before and after the FFIT programme

6 Chapter six: ‘It was like opening up your exam results and saying, “hey, I did alright here”’: men’s accounts of receiving personalised feedback on their objectively measured activity patterns

6.1 Introduction

This chapter provides an overview of the ways in which the 28 men, interviewed after they had participated in the 12-week FFIT programme, described their experiences and their reactions to receiving objective feedback on their activity patterns at the end of the 12-week FFIT programme. As described earlier, the activPAL3™ is a small, lightweight, objective physical activity monitor worn continuously over 24 hours on the right thigh, approximately halfway between the hip and knee. The activPAL3™ is capable of providing comprehensive personalised feedback on one’s activity and sedentary behaviour patterns. However, unlike the pedometer the activPAL3™ does not provide instant feedback and the information has to be processed by the researcher before any feedback can be provided. The activPAL3™ is currently marketed as a research tool and the utility of this kind of feedback as a motivational and educational tool is not currently well understood. The aim of this chapter is therefore to contribute to the literature by exploring men’s reactions to receiving comprehensive feedback on changes in their objectively measured activity patterns.

The first section of this chapter examines the men’s experiences of wearing the activPAL3™ to objectively record their activity levels. Next, the men’s expectations of receiving the post-programme feedback letter (Appendix 4) are described. The following section examines men’s understandings and meanings of the content of the feedback letter. Finally, men’s uses of the post-programme feedback are discussed in detail. Men’s accounts were systematically compared during the analysis, examining similarities and differences between weight loss status post-programme.

6.2 Men's experiences of wearing the activPAL3™ to objectively measure their activity levels

The majority of men wearing the activPAL3™ to objectively monitor their activity viewed it as a positive experience. However, prior to being fitted with the device a few felt 'suspicious' or 'apprehensive' (Section 1, Table 8, p. 182). Once the activPAL3™ device had been fitted several men said they found that it had little detrimental impact on their daily lives and was unobtrusive (Section 2, Table 8, p. 182). Some were very positive about wearing the activPAL3™ and explicitly said they really enjoyed wearing the device (Section 3, Table 8, pp.182-183). This was attributed to their eagerness to receive objective personalised feedback on their activity. This information was said to be of significant interest as, like the pedometers, it provided them with objective, indisputable and tangible information on their activity patterns. A few men suggested they would even like to wear the device all of the time and particularly valued the technological aspects of the device. These were important factors in encouraging the men to comply with wearing the device both before and after taking part in the 12-week 'active' phase of the programme.

In contrast to the pedometer which was worn on the men's clothing, the activPAL3™ was applied directly against the skin and worn continuously for 24 hour monitoring. Similarly to men's initial experiences of wearing the pedometer, most said that wearing the activPAL3™ was 'strange' at first (Section 4, Table 8, pp. 183-184). Some were cautious initially in case it became loose or damaged during their daily activities but the majority said they soon became accustomed to wearing it and quickly forgot that it was there.

Despite the fact most of these men adapted well to wearing the monitor, there were a range of negative experiences associated with wearing the device (Section 5, Table 8, pp. 184-185). A few experienced problems with the adhesive tape which resulted in irritation or adverse skin reactions. Other problems included issues with the adhesive tape coming loose when showering or sticking to their trouser leg/clothing when getting dressed or undressed. Some encountered problems with the adhesive tape failing to stick properly to their thigh as a result

of hair on their legs; one man said he had to shave off a patch of hair so the device would remain affixed. Some men encountered problems with the device falling off during vigorous exercise or physical exertion (e.g. playing football or whilst at the gym), when they were perspiring more heavily. The men said this was ‘frustrating’ as it meant their activity levels would fail to be recorded accurately and would not be visible on their personalised activPAL3™ feedback. Two men experienced problems with airport security and had to abruptly remove their monitors prior to boarding flights. One of the men described being ‘uncomfortable’ about having to remove the device suddenly in a public space. Some were less enthusiastic about wearing the device and said they felt relieved when it was finally time for it to be removed. For them the device had begun to interfere with their daily activities and/or become a ‘nuisance’. Some men explicitly compared their experiences of wearing the activPAL3™ with wearing the pedometer and said the activPAL3™ was more obtrusive because it was attached directly to their skin and had to be removed if they wanted to bathe or swim.

Some men spoke about the device being visible to others; for example, they could see flashing lights through clothing at work or while playing sports (Section 6, Table 8, p. 185). Consequently, this prompted conversation with other people about why they were wearing it and was a source of humour and entertainment. Most of these men said they received positive encouragement from others and perceived people as having a genuine interest in their reasons for wearing the monitor.

The men had been asked not to do anything differently during the first week of wearing the device prior to the start of the programme in order to obtain an accurate representation of their baseline activity levels and the vast majority said wearing the activPAL3™ had not impacted upon their activity levels:

CD: Do you think wearing the activPAL changed what you did during the course of the week, in any way?

Tim: I don’t think so. [...] I didn’t try to do anything different to sort of skew the results [...] they were always quite clear through the programme. It was, you know, first week or, you know, just do what you normally do

[...] I was keen not to sort of skew the results by going off for 10ks here and there, just to kind of up the numbers [...] wearing that, in itself, didn't change what I did. I was just more intrigued to see what it actually told us. (Tim, age 33, BMI: obesity class I)

However, there were a few men who said that wearing the activPAL3™ had prompted them to increase their activity levels:

CD: Do you think that wearing the activPAL changed what you did during the course of the week in any way?

Ross: It probably did, because I knew that I was being monitored in my activity and things like that, so aye, it probably did make me a bit more active than I might have been. (Ross, age 52, BMI: obesity class II)

Table 8 Men's general perceptions of wearing the activPAL3™

	Verbatim quotes
<p>Men's anticipation of wearing the activPAL3™ to objectively monitor their activity patterns at the beginning of the programme</p> <p>Section 1</p>	<p>At the start I was a bit apprehensive about it because [...] I don't like people [...] telling me what I already know [...] but I think when you're actually doing it and because it's, there's an actual course there, measured your fitness levels and that stuff, it actually does make you, it actually makes you feel okay about it. So aye, I think in general it was actually quite a, quite good to get objective feedback on your fitness. (Gordon, age 40, BMI: obesity class I)</p> <p>[...] At first I think we're all sorta' sceptical about wearing it, thinking, "what's this gonnae tell us", "you know, what will it tell us?" But at the end of it, [...] fae the folk I spoke to on the course nobody decried wearing it, or naebody [nobody] felt ashamed to wear it or embarrassed wearing it. (Ryan, age 54, BMI: obesity class III)</p>
<p>The activPAL was perceived as an non-intrusive, piece of equipment with few barriers or negative issues associated with wearing the device</p> <p>Section 2</p>	<p>Once the activPAL was fitted and you got used tae it, you didnae really notice it was there at all [...]. (Ross, age 52, BMI: obesity class II)</p> <p>Wearing it from, was, you know, simple. You barely knew it was there. (Tim, age 33, BMI: obesity class I)</p> <p>To be honest a lot of the times you didn't even realise it was your leg at the time, it wasn't until it came time for you to take it back off us again that you remembered it was there because it would never show any discomfort or anything on your legs when you had it on. (Alex, age 42, BMI: obesity class III)</p> <p>No, no, the only problem was taking it off, just the hairs on my legs basically, but no, absolutely none whatsoever, it didn't interrupt my sleep pattern, anything, no, no problem. (Dan, age 58, BMI: overweight)</p>
<p>Men's enjoyment and perceived importance</p>	<p>Oh, I enjoyed wearing that [...] the activPAL [...] the monitor told ye how active</p>

<p>of wearing the activPAL to receive objective personalised feedback on their activity levels</p> <p>Section 3</p>	<p>ye were [...] I love that, I would love to ha'e [have] that now, because that was absolutely brilliant, I thoroughly enjoyed that [...] I loved ha'in' [having] it on my leg knowin', that tellin' us how much exercise [...] I thought was great idea [...]. (Calum, age 38, BMI: obesity class II)</p> <p>At the time, that was great. I actually, I wish I could wear one all the time. Because I thought they were great. Actually feeding how active you were and then you couldnae' get away from it if you know what I mean, ken, it doesnae lie. So I felt it was really good wearing activPAL, aye. (Martin, age 34, BMI: obesity class III)</p> <p>Yep. I think, because you're quite excite - well, certainly I was, I was quite interested to see the results at the end of the week, over the week of having it. So when you got the thing through the post, with the, your steps and your running and your walking, results from the activPAL, I was really interested to see that, to see how active I was, or how inactive I was. (Thomas, age 37, BMI: overweight)</p> <p>So it wasn't an inconvenience, it wasn't difficult to wear, but I suppose for me I just saw it as a reminder of "this'll prove that the effort's worthwhile, this'll give me information to kind of support the fact that what I'm doing is helpful." (Frank, age 49, BMI: obesity class II)</p>
<p>Men's initial perceptions of the activPAL as a 'strange' or 'weird' piece of technology worn next to their skin which the men quickly became unaware of</p> <p>Section 4</p>	<p>It was certainly a bit strange to start with, but... aye, you know you soon acclimatised, you soon forget that it's there. (Donald, age 49, BMI: obesity class III)</p> <p>It was weird for the first day or two. And once... that was that, it was fine. Got on with my work, didn't even notice it was there. (Andrew, age 41, BMI: obesity class II)</p> <p>The first time I done it [...] it's like anything, when you have something strapped</p>

	<p>to your leg, you know, you're conscious of it being there, and you're constantly touching it to make sure it's not fallen off, or came loose. And you're kind of worried about certain things you do affecting or breaking it. But after a couple of days, like anything else, you just kind of forget it's there [...]. (Thomas, age 37, BMI: overweight)</p>
<p>Men's negative experiences of wearing the activPAL to quantify their activity levels</p> <p>Section 5</p>	<p>I had a wee bit o' a sorta' reaction tae it. You know skin, like the... the actual, you know the sticky stuff that you put the, the thing on it sorta broke ma skin oot a wee bit you know [...] a reaction to the you know the glue that sticks it to your leg sorta thing. The actual meter an' you know [...] the glue stuff that stuck the you know that held the, the meter on, that was the, that was the issue. (Billy, age 52, BMI: obesity class II)</p> <p>I felt that, when it was very first put on, you know, the sort of patch thing that you put on, it start to come away a wee bit, so I just shaved some of the hairs off my leg and put it back on and [...] that patch did me for the next 4 or 5 days actually. (Gary, age 50, BMI: obesity class I)</p> <p>I didnae' really enjoy that because it stuck tae your leg and it was always there [...] it just fell off [...] when I was playing fives or at the gym [...] the sweat was coming through it just pulled right off. (Grant, age 58, BMI: obesity class III)</p> <p>I also had to explain what it was and I got stuck in the airport and I was like, hands halfway down my trousers trying to rip it off before I went through the security scanner. [...] the hand scanner picked it up and they wanted me to take it off so I was standing in a quite public place with my hands down my trousers trying to rip it off, and it was like quite uncomfortable ripping all the hairs off my leg with it as well. (Ben, age 36, BMI: obesity class I)</p> <p>That was probably more [...] burdensome, if you like. It's more noticeable [...] it's attached to your skin as opposed to the pedometer which is you know on your clothes [...] you're probably a bit more aware of it than you are of the</p>

	pedometer. (Chris, age 58, BMI: overweight)
Men's perceptions of the activPAL being visible to others while they were wearing the device during their daily lives Section 6	<p>It was a bit of a laugh really. You know I've got two young nieces so kidding on that you're the bionic man. You know so it was a bit of a joke but also when I was in group activities, so you know playing fives or doing some kind of sport activity with the other guys, people would notice it and again it would I suppose prompt discussion about why you had you know a plastic, a bit of plastic put on, stuck on to your leg. (Frank, age 49, BMI: obesity class II).</p> <p>A couple of folk at ma football say, "what's that?" And I was tellin' them "crikey that's a great idea". So I don't think anybody was negative about it. (Ryan, age 54, BMI: obesity class III).</p> <p>There was a few interesting moments when you're sitting at your desk or you're sitting in a meeting and all of a sudden someone notices that your leg is flashing through your trousers. I had some interesting stories and questions there. [...] the flashing light, so that it was just that explaining to people what it was, although when people did explain what it was, everyone kinda understood and it was actually very interesting; it's an interesting thing to discuss, good ice breaker in various meetings I was at. (Ben, age 36, BMI: obesity class I)</p>

Most men did not mind having their activity levels externally measured; as Michael said: “Well I didn’t have a problem with it or I wouldn’t have agreed to it.”

(Michael, age 55, BMI: overweight). Some were more explicit about the perceived benefits and feelings of enjoyment associated with having their activity levels externally monitored by someone:

CD: How did you feel about having your physical activity levels objectively measured?

Chris: I thought it was really good. It’s great [...] it’s not the same if you’re, like, doing it yourself, or so on so forth, you were kinda, what I think it felt as though it was all kinda professionally done, you know? That I had trust in what people were doing and what, and the results of what people did for me and so on. So, you know, it was, aye, I mean, it was all ae that [...] I enjoyed getting my measurements taken [...] and I enjoyed getting the results ae [of] that back [...]. (Chris, age 58, BMI: overweight)

CD: How did you feel about having your physical activity levels objectively measured?

Ben: Actually I thought it was far better than having it subjectively measured for a start. No absolutely, [...] I think having that independent and that objective feedback is always [...] the easiest person to lie to is yourself, so having that objective measurement meant that there was no, you had to confront the truth. (Ben, age 36, BMI: obesity class I)

Alan (age 44, BMI: obesity class I) stated that having his activity levels objectively monitored was comparable to the monitoring of elite athletes or sports persons which helped legitimise the process: “I’m quite happy about that [...] if you’re a professional football, or a rugby guy or a professional athlete you get measured and monitored all the time”. Therefore some men valued the fact they were part of a professional research study and viewed the objective technology as a means of accessing an accurate and indisputable representation of their activity levels.

A few men explicitly recognised the importance of getting feedback from objective monitoring as a means to facilitate changes in their own individual PA behaviour. However, they simultaneously recognised the importance of providing researchers with scientific evidence which could potentially be used to support future deliveries of the programme. For example, Billy described how he perceived

himself as being a “guinea pig” and did not mind that some of the information on his activity levels might assist in improving the programme for other men like him in future. Billy emphasised the additional importance of deciphering whether certain components of the programme were effective in increasing the men’s activity levels:

CD: How did you feel about having your physical activity levels objectively measured?

Billy: How did I feel? It didnae’ bother me [...] I don’t suppose the term’s guinea pig but... you know other people could learn fae ma mistakes or they can learn from you know ... “yeah, that’s whit he was, now that’s what he is noo, by daen this ...” then that’s fine [...] I’ve never been vain enough tae, tae worry about sorta what people think or, or say. [...] it’s dual purpose I mean [...] you’re helpin’ us but at the same time we’re helpin’ you right we’re, you know we’re feedin’ information intae [into] you, to help you better the programme tae help other people so you know it is a sort of [...] guinea pig type thing [...] we’re proving your theories if you like by doin’ the programme [...] the information we feed back to you helps you improve the programme for the next generation o’ [of] people who’s gonnae’ dae’ [do] it. (Billy, age 52, BMI: obesity class II)

In summary, overall, most of the men said they did not alter their activity levels while wearing the device although some did. The men mostly reported enjoying being externally monitored and appreciated the chance to gain greater insight into their activity patterns, whereas others enjoyed contributing scientific data towards the programme. In the next section, the men’s expectations of receiving the post-programme feedback letter are discussed.

6.3 Men’s expectations about their post-programme feedback, prior to receiving their feedback letter

6.3.1 Positive expectations

Men were asked if they had any expectations about the information that might be included in their post-programme feedback letters before receiving them. Most said they did not have any prior expectations of what the feedback would be like or about their individual results. Several said they anticipated the information would show improvements in their activity and weight-related measurements

congruent with behavioural changes they had made while taking part in the programme. These were more likely to be men who knew they had lost weight or had been successful in achieving their weight loss goals. They were confident their feedback would illustrate the lifestyle changes they had made. These men were more enthusiastic about receiving the post-programme feedback letter, for example: “I had been looking forward to getting it - as sad as that sounds [...] I knew that I was being more active [...] I just didn’t know to what extent” (Tim, age 33, BMI: obesity class I). Some men already had received confirmation they had lost weight from objective physical measurements performed at the end of the 12-week programme. For example, Frank commented:

No I knew that I was doing the right things [...] I knew that I’d lost weight. I knew that I was fitter just, you know, from everything; from the clothes I was able to fit into were smaller. I fitted much better into the clothes that I already had. People commented on that as well [...] I suppose I was still on a bit on the high from the last session where - I think it was the last session we got the final weights taken and we had been asked to set kinda goals and my goal initially was five percent. If I could lose, over the weeks of the programme, if I could lose about [about] five percent of my weight, that initially I would have been happy [...] but once I got beyond that and got to ten percent I was still pretty high from that when I got the letter.
(Frank, age 49, BMI: obesity class II)

During his interview Frank described how he had altered his lifestyle, had managed to lose 10% of his body weight during the 12-week programme and was still on a “high” when he received the feedback letter. He felt “fitter” and had received comments from others about looking different after taking part in the programme. Similarly, Calum (age 38, BMI: obesity class II) said that he was already aware that he had lost weight and therefore was not concerned about receiving the feedback letter: “I wasnae worried about it [...] I knew that I was losing weight, coz when my clothes started fittin’ better.” Therefore, these men had experienced tangible changes that support an anticipation that their feedback would show improvements.

6.3.2 Neutral expectations

In contrast, some men reported having fewer expectations as to what their feedback letter might show, for example:

CD: Did you have any preconceptions of what your feedback might be like?

Jamie: No, to be honest, it was just more a case ae [of] just seeing how it goes and seeing what comes back and then we'll take it fae [from] there. But no, I'd no preconceptions [...]. Whatever was gonna come back was gonna come back. It was a case of dealing wae [with] it there and then. I think I have done, to the best of my ability [...], so no, not at all. (Jamie, age 36, BMI: obesity class I)

Men who mentioned having lesser expectations about their feedback were more likely to stipulate that all they wanted from the letter was confirmation they had made some improvements in their activity and/or weight-related metrics over the course of the programme and felt it was important to receive some form of objective feedback:

CD: Did you have any preconceptions of what your feedback might be like?

George: (Laughs) No, not really, [...] all I had hoped that I would get something back that said, "You have improved", in what way and to what extent, I don't know. All I would have hoped [...] no' even a feedback letter, even just a gauge or a print or a graph to say [...] "These are the results, you have improved by what percentage or you've lost weight or you've lost inches or something". All I expected was basically just, "There's the starting figures, there are the ending figures and you have improved". (George, age 56, BMI: obesity class II)

These men mentioned hoping to see some improvements in their measurements consistent with the changes they had made to their lifestyles but were unsure about what their feedback might actually entail.

6.3.3 Negative expectations

Although most of the men overall said they were not anxious about receiving the feedback, some were less enthusiastic about receiving the feedback letter. These men were less likely to explicitly discuss the changes they had made during the interview, either as indicated by the objective measurements or tangible changes in their appearance. They were also less likely to have achieved their weight loss targets and explicitly described more barriers to being able to increase their activity levels:

CD: Was the feedback that you got in the letter as you expected?

Alan: [...] No, again it was just [...], “it’s a letter, here’s your data, that’s the day. Ok, right fine.” [...] depending on the week that I had when I wore it the second time if there was more sport being allowed to get played here then the result would have changed your data, if you like. It would’ve shown a wee bit more red [colour indicative of time spent active] if you like. (Alan, age 44, BMI: obesity class I)

During his interview, Alan was less enthusiastic about receiving his feedback letter and suggested that he had less perceived autonomy over his ability to increase his activity levels. Alan used language such as “being allowed” to describe specific times when he was able to be more active which would have been displayed visually in red on the activity summary in his objective feedback letter (an example of the feedback is given in Appendix 6). Other men who were less enthusiastic about receiving the letter described problems with, or challenges to, being able to increase their activity levels, either as a result of injuries sustained or becoming unwell during the programme. They were also less likely to have reached their weight loss targets at the end of the programme:

[...] I was a wee bit [...] unsure exactly what the feedback would be, as I say, I missed the last couple of weeks [...] with this poisoned foot and, to be quite honest, during that period [...] I wasn’t able to move about as much, [...] and I was a wee bit concerned [...] that I might of undone a lot of the good work that I had done, so from that point of view I was a wee bit worried about the feedback. (Dan, age 58, BMI: overweight)

The concerns and worries which Dan expressed about receiving his post-programme feedback were reflected in the accounts of other men who perceived themselves as having been less successful during the programme either with regards to increasing their activity levels or losing weight. In the next section of this chapter I explore men’s understandings and meanings of the content of the post-programme feedback letter.

6.4 Understandings and meanings of the post-programme feedback

There were a range of responses in men’s accounts of the extent of their comprehension and interpretation of the information in the post-programme feedback letter, specifically the objective activity patterns recorded by the

activPAL3™. Most described the feedback on their objectively measured activity patterns as being relatively straightforward to understand. However, some of the information in the letter was seen as being more comprehensive and complex compared to the information on their weight-related measurements and some found the information in the letter more readily interpretable than others. For example, a few men said that it took them several attempts to read over the information before they were able to fully comprehend it:

Aye, [...] you had tae read a wee bit intae [into] it [...] but it wasnae that difficult. Once you've read the chart and read what the things meant, it was fairly simple tae follow after that. (Kevin, age 47, BMI: obesity class I)

The graphs showing the changes in your activity and stuff like that were a wee bitty hard to understand at first, until you really sat doon [down] and read them properly and you could make sense oot [out] them. [...] once you understood what was what, it was fairly easy to read them and see the differences, aye. (Ross, age 52, BMI: obesity class II)

In these extracts both Kevin and Ross suggested that the information about their physical activity was not readily understandable and described having to spend time reading over their feedback letters to fully interpret the information, although once they had both taken this time, they found the information relatively easy to interpret.

In contrast, some were particularly enthusiastic about the presentation and layout of the information in the feedback letter and specifically liked the use of different colours and charts to illustrate their activity patterns. These men recalled more specific aspects of the letter in their interviews and explicitly said how much they enjoyed interpreting the data. For example, Donald said:

I found that feedback [...] perhaps the most [...] comprehensive feedback of the whole programme. It was good, it was understandable, the graphics were good. The information was succinct, easily interpretable. So, aye, I found that particularly interesting, and good. [...] I just found the feedback [...] comprehensive and easily understandable. (Donald, age 49, BMI: obesity class III)

Similarly, Jamie articulated how “easy” the information in the feedback letter was to interpret:

[...] it's shown on a graph and it's all colour-coded. It shows you, it's in hours so you know what hour of the day you were doing stuff and what you weren't - so no, I mean it's very easy to understand. It's not a problem at all. (Jamie, age 36, BMI: obesity class I)

Both men liked the use of colours to illustrate their activity patterns and appreciated that the information was tailored specifically to them. Some men explicitly described being familiar with the language and format of the information in the feedback letter. These men said they were used to working with similar forms of information (e.g. statistics, graphs and charts) on a regular basis (e.g. as part of their jobs) which helped them to make sense of the objective feedback:

I quite like numbers [...] I'm right into, you know, I like really seeing the difference, you know, in the change. [...] I just find all that stuff really interesting. And when it's about me, then it's even more interesting. So no, [...] the information is - I was gonna say information isn't power, but you know what I mean? [...] I kinda work with, not graphs like that one, necessarily - but I work with graphs and figures and stuff and stats at my work [...] I certainly found it quite easy. (Tim, age 33, BMI: obesity class I)

Similarly, Gary (age 50, BMI: obesity class I) said he was used to receiving comparable types of feedback via medical assessments at work:

Well I've seen medical results that I've had from BUPA in the past and some of them were kinda of in the same format as that, so from my point of view, it was fairly easy to decipher it. [...] I'm trying to remember if it had like a RAG (red, amber and green) status against it or not, you know, like red for no improvement or a worsening, or amber for staying about the same, and green for an improvement. (Gary, age 50, BMI: obesity class I)

A minority of men found the information in their post-programme feedback letter particularly challenging to interpret and perceived it as too complex and not readily understandable. For example, Jonathan said he perceived the information to be more of a "gimmick":

The visual aid of that thing, it was just a gimmick to me. But to somebody [...] like yourself that's maybe trained at looking at these things and know what they're looking for, then it obviously that really, really helps you guys [...] I think to a trained eye they're great. (Jonathan, age 47, BMI: obesity class III)

Jonathan's account suggests he found his feedback letter as being too difficult to make sense of and he struggled to interpret detail provided on his activity patterns. Therefore, for some men the detail of information in the post-programme feedback was too comprehensive and was not interpretable without further assistance.

The majority of men described their feedback as being congruent with their expectations and expressed positive reactions to the information in the feedback letter. These men were more likely to have successfully made changes to their lifestyles over the 12-week programme. They used language such as, 'extremely pleased' 'good' or 'positive' and often more emotive language, such as 'proud' or 'overjoyed', to articulate how receiving the feedback letter post-programme made them feel. The feedback letter provoked strong emotional responses for these men as it confirmed or reaffirmed the successful changes they had made over the programme. However, other men were less enthusiastic about the feedback letter and some said they felt 'disappointed'. These were men who perceived themselves as being less successful in achieving their weight loss or PA targets during the programme.

The men thus displayed a range of responses to the information in the feedback letter, depending on whether they perceived themselves as being successful during the programme and on the extent to which they were used to interpreting graphical or statistical data in their daily lives. Following detailed analysis, I identified four key types of meanings attributed to the feedback: 'transformative', 'celebratory', 'confirmatory' and 'disappointing'. Each of these is discussed in detail below.

6.4.1 Transformative

Some men were particularly positive and enthusiastic about the post-programme feedback letter and perceived the information as being illustrative of the transformative changes they had made over the course of the programme. These transformational processes included both changes in their physical appearance (i.e. weight loss) and their behaviours (i.e. healthier/more active lifestyles):

The feedback letter [...] it was like two different people [...] as if I'd done week one [...] and somebody else had [...] done the last week [...] everything in it had improved [...] it felt great you know reading it and you're saying, "crikey, I done that!" [...] I just felt that for me, as I said I felt totally overjoyed at it. (Ryan, age 54, BMI: obesity class III)

It showed you really the transformation and explained the transformation that you went you know, that the whole programme had made tae [to] you [...]. So yeah, [...] very positive thing tae [to] get that feedback. (Billy, age 52, BMI: obesity class II)

These men articulated how the information enabled them to see differences in their activity levels and weight-related measurements at the beginning and end of the programme. By the end of the 12-week programme these men had achieved their 5% weight loss target and were very satisfied with what they had been able to achieve. The information in their feedback letters was an important means of visualising the significant changes they had made to their bodies and their wider identities.

6.4.2 Celebratory

A few men described receiving the feedback letter as being 'celebratory' of their efforts to alter their lifestyles during the programme. These men often used language such as 'achievement' or 'proud' to articulate how the information in the feedback letter made them feel. For example, George described receiving the feedback letter as like being congratulated on his achievements:

It was actually a big plus because we all do things that we like to get feedback on if it's good, if you've done well, human beings like a pat on the back. So, it was like opening up your exam results and saying, "Hey, I did alright here, I did as well or better than I expected". (George, age 56, BMI: obesity class II)

George's comparison of receiving the post-programme feedback letter with opening his "exam results" was used by other men in anticipation of seeing their results, suggesting some were more apprehensive about opening the letter than they had explicitly articulated. However, the information in his letter confirmed improvements in accordance with George's expectations and thus was perceived as gratifying. George also articulated the importance of being given objective or

external recognition of his achievements. For example, he said it was like getting a “pat on the back” which was satisfying and made him feel good about himself by reinforcing that he had “done well” during the programme. Thus, for some men the feedback letter was perceived as being congratulatory or celebratory recognition of their efforts and success.

6.4.3 Confirmatory

The majority of the men said it was important to receive feedback in ‘black in white’ as it gave them objective ‘proof’ or ‘evidence’ of their efforts and confirmed the programme had been effective and worthwhile. The feedback letter was described as a ‘certificate’, ‘qualification’ or ‘record’ which provided confirmation of their achievements. Some explicitly said they felt they needed to see objective changes for themselves in order to externally validate comments they had received from other people in relation to changes in their appearance since taking part in the programme:

I lost ten percent of my weight over the period [...] I look very different from what I did before I started [...] so it reinforced the effort that I’d put in. [...] I felt “well you know the effort I’ve been putting in has been recognised by my own results,” and so it’s nice when people say “you’ve lost weight,” or “you look better,” or you know “that’s nice,” and it’s definitely a reinforcing agent but getting that in black and white based on data that I’d provided through the machinery, I thought you know “that’s really good, that’s me, that’s confirming what people are saying so they’re not just being nice about it, you know. They’re recognising, maybe not know the detail, but they’re commenting on what they see and these results cement that.” (Frank, age 49, BMI: obesity class II)

Frank emphasised the importance of being able to see precisely what he had achieved from the objective feedback and viewed it as being more genuine than verbal comments about his physical appearance. The activPAL3™ feedback was thus viewed as being robust “data” which gave the men reliable information on their own behaviours and actions. The information in the feedback letter provided the men with a tangible representation. The colourful graphic representations from the feedback enabled the men to visualise the changes for themselves and confirmed what could be achieved without the need to incorporate more extreme or vigorous forms of exercise. For example, Ryan commented:

The first time it was done tae the last time it showed how more active you were walking, showing you just how a slight increase in physical activity how it registered. You know, you say, “crikey, it’s went fae there, went from one colour to another because you’ve done that!” I say, “That was only maybe digging a garden or cutting grass...” I says, “but it just showed you how little it takes.” [...] I explain to folk “You don’t need tae go oot and run six mile, just digging the garden or increasin’ your general stuff around the house” I says “increases it”. (Ryan, age 54, BMI: obesity class III)

In Ryan’s account, he described how these visual representations of his activity levels confirmed what could be achieved just by implementing ‘light exercise’ and moderate increases in his daily energy expenditure. This helped to eradicate the notion that more strenuous or extreme forms of PA were necessary to achieve significant changes to his overall health and body composition.

6.4.4 Disappointing

Not all of the men said they interpreted the information in the post-programme letter as positive; a minority described receiving the feedback as ‘disappointing’. These men were more likely to be those who did not achieve their 5% weight loss target during the programme and had said they felt apprehensive about receiving the letter. These men reported being dissatisfied as the information provided them with evidence of their lack of progress throughout the programme:

When I got the full feedback about the changes that had happened, I think generally [...] there had been positive changes [...] but slightly disappointed that it hadnae been as much as I hoped [...]. It was helpful tae see the changes I made, but at the end o’ the first phase in the programme, I was still only doing 5780 steps which is still considered just in the sedentary, you know, so I would want tae get up at the very least to ‘average’ into the ‘moderately active,’ you know. (James, age 42, BMI: obesity class II)

I thought I might have done a wee bit better, I felt [...] wee bit disappointed in myself, not in anything else, but in myself, that I hadn’t made more of it to be honest with you. From my point of view it was, not critical by any means, but I did, it was me that was been critical of myself, feeling that I could possibly have achieved a bit more through a wee bit harder work. (Dan, age 58, BMI: overweight)

Both James and Dan said they felt ‘disappointed’ in response to the feedback letter as it highlighted the fact they had achieved less significant changes than they had hoped for. They were critical of themselves and said they wished they had put in greater effort during the programme to achieve greater changes. The men who expressed this dissatisfaction in response to the feedback letter were generally more muted in their emotional responses, compared to men who had successfully achieved their weight loss targets. Nonetheless, despite being disappointed by their feedback, most of these men said they found at least some aspects of the information in the feedback letter encouraging or helpful. It is also important to note there were a minority of men who *had* achieved their 5% weight loss target who also reported being slightly disappointed in response to some of the information in their feedback letter:

I was a bit disappointed because I thought I’d a’ seen a bigger difference. [...] I thought between the first one and the second one I thought my levels o’ activity had really gone up. But I think I remem-, on, when I was reading the feedback [...] I thought well that’s not as big as I was expecting. [...] I was probably disappointed that the difference between the first and the second readings weren’t a lot bigger. But I think that’s maybe just a personal thing to me [...] [I] just wanted a, a bigger improvement [...] the improvements [...] were, [...] pretty standard or normal. (Jeffrey, age 53, BMI: obesity class I)

In this extract, Jeffrey said that he felt disappointed in response to the feedback as it was not consistent with prior expectations. He anticipated that the increases in his activity levels at the end of the programme would have been much greater than what was portrayed in his feedback letter. This was despite the fact Jeffrey had achieved a weight loss of almost 10% of his body weight during the 12-week programme. He said that he would have liked to have seen “a bigger improvement” instead of what he perceived as being “standard or normal” to fully reflect the hard work and dedication he had put into altering his lifestyle throughout the programme. For some men their perceptions of the extent to which they had altered their lifestyles or increased their activity levels were not always congruent with their post-programme objective feedback which resulted in some men feeling dissatisfied. In the following section I examine men’s uses of the post-programme feedback in relation to the main theoretical principles of SDT (Deci and Ryan, 2000).

6.5 Utilisation of the post-programme feedback letter

The men reported using the post-programme feedback letter in different ways which varied according to their ability to make sense of the information and whether they perceived themselves as having been successful during the programme. The findings discussed resonate closely with the motivational framework of SDT (Deci and Ryan, 2000) and this again provided a useful lens through which to interpret these data.

6.5.1 The feedback as a tool for self-reflection

Some of the men were explicit about the importance of the information being personalised to them as individuals. This was perceived as being more meaningful and interesting than other forms of generic advice in relation to weight loss or behaviour change:

It was personalised so you could see a relevance to yourself. You knew that it wasn't somebody else's thoughts about what you should be doing, [...] it was applicable to you as an individual. So it was tailored for you and should mean more to you than just general advice about weight loss or appetite or any of the core components of the programme. (Frank, age 49, BMI: obesity class II)

Well [...] it was interesting yeah. Because it was [...] me that did it. It was [...] related to me [...] it was me that wore it. [...] it was personal to me. It [...] was about me. [...] So I mean as far as I was concerned it was all interesting and helpful. (Jeffrey, age 53, BMI: obesity class I)

Frank emphasised the importance of the feedback being specifically “applicable” to himself and his own unique behaviours. The information was of significant interest and held intrinsic value compared with more general or external information about what he “should be doing” to alter his behaviour. Similarly, Jeffrey described the feedback as being “interesting” and “helpful” because it was himself who had worn the activPAL3™ monitor. Hence, receiving personalised feedback was regarded as meaningful and interesting, prompting men to utilise the information for gaining greater insights into their own behaviour.

Several men explicitly said they were motivated by their feedback letter, particularly men who had perceived themselves as being successful in achieving their weight loss targets. These men described the feedback letter as being comparable to a ‘spur’, ‘spark’ or ‘jolt’ which encouraged them to sustain their healthier lifestyles after the 12-week programme. The information in the feedback letter was perceived as motivating not only because it was personalised but also because it exhibited the changes that had occurred over the 12-week programme. For example, when asked about what it was like to receive the feedback letter Frank commented:

Well I suppose I was still on a bit on the high from the last session [...] we got the final weights taken and we had been asked to set kinda goals [...] if I could lose about five percent of my weight [...] I would have been happy [...] but once I got beyond that and got to ten percent I was still pretty high from that when I got the letter. The letter continued to report that I was doing most things right [...] it reinforced I suppose the good news that I’d already got. It was a kind of reminder weeks later, “actually you’ve done really well and [...] what you’ve enjoyed about losing weight, what you’ve found beneficial are still there, they’re still tangible, they’re realistic goals. You just need to keep up the effort.” [...] I was still kind of pretty drunk on the initial feedback we got at the end of the session and that just was another kind of you know gold star really. (Frank, age 49, BMI: obesity class II)

Frank described being still on a “high” and “drunk” in response to the amount of weight he had lost at the end of the programme. The feedback letter reinforced these achievements and reminded him about the things he had “enjoyed” about losing weight and prompting him to maintain his efforts. Men who had been successful in achieving their weight loss goals and altering their behaviours were more enthusiastic about receiving the post-programme feedback. Receiving the letter was perceived as motivating as it illustrated precisely what the men had been able to achieve, which, in turn, enhanced their confidence in their abilities to continue their healthier lifestyles:

I was really, really happy because it showed a big, big significant change in what I’d done [...] so that made me feel even better about myself that I can do it. (Alex, age 42, BMI: obesity class III)

It also gave me the confidence that I could actually, I could do it. You know. I think it's always quite easy to say, you know, "Oh, I could lose weight, I could do more exercise, I could eat less junk". But when you do it, and you see the results written down, then it gives you a bit of confidence, you know. (Thomas, age 37, BMI: overweight)

Some men emphasised the importance of seeing the feedback recorded objectively which motivated them to continue their active lifestyles:

CD: Do you think that the feedback that you got in the letter has had any impact on your physical activity levels?

Thomas: Yeah. I mean it certainly - it gave me a kind of kick up the backside [...] about being able to continue the work I was doing. So, again, going back to seeing it in black and white, and seeing the, your progression throughout the 12 weeks. Sort of gave me the spark to continue, and increase the levels that I was already doing [...] it was nice to see everything else coming down [...] not massive strides forward, but certainly enough to give that bit more motivation to continue with what I was doing. (Thomas, age 37, BMI: overweight)

Despite the fact that Thomas had not achieved "massive strides forward" he was satisfied he could see some improvements in the objective feedback. A few men said they were motivated to continue their efforts in response to the feedback even if they had achieved only modest improvements during the 12-week programme. Some were explicit about their desire to strive even harder to make further changes in response to the feedback:

I look at that I go "Right I've got to get that, and I've got to want to be better" [...] and it just mak[e]'s us be mair [more] determined to keep going, [...] know what I mean? It's there in black and white saying, "right you've done that, and well done, but you need to still dae better", and that's the way I look at it. I've got to be better and just keep going. (Calum, age 38, BMI: obesity class II)

For Calum the feedback reinforced what he was capable of achieving thus bolstering his confidence to continue striving to achieve even greater changes post-programme. However, by contrast, some also felt motivated to try harder in response to the information due to the fact their feedback had fallen short of their

prior expectations. For example, when asked about what it was like to receive the post-programme feedback, Jeffrey responded:

That's what really helped me the most and motivated me the most. [...] The difference between my activity levels between the first and second [...] also the difference between my sedentary periods, between the first and the second [...] they weren't as big as I was hoping that they would be. (Jeffrey, age 53, BMI: obesity class I)

Therefore, for some men the differences in their objective feedback between the beginning and the end of the 12-week programme were not as great as they had anticipated which prompted them to increase their activity levels further to be in line with their own desired standards.

Overall, the personalised information in the post-programme feedback letter was perceived as being more meaningful than more general information or feedback in relation to health or PA behaviour. Interpreting the information was perceived as interesting and enjoyable by some men. The information in the feedback letter was a means through which the men could visually reflect on their own achievements and functioned as an important source of verification of their level of success, which, in turn, augmented their motivation to continue healthier lifestyle habits. The post-programme feedback could be interpreted as providing important support for the men's needs of autonomy and competence which according to SDT are integral for optimal motivation.

6.5.2 The feedback as a tool for behavioural modification

For some men being able to observe significant improvements in their own activity levels was the most important aspect of receiving the post-programme feedback letter. The feedback enhanced confidence in men's abilities and proved they were capable of making significant increases to their activity levels and/or lose weight during the course of the 12-week programme. This, in turn, motivated several of these men to continue their healthier lifestyles after the 12-week programme had ended.

However, other men spoke about how the information on their activity patterns could be interpreted on different levels. These men discussed the feedback in greater depth and they reflected upon ways in which they could make use of the information further as a tool for behaviour change. For example, Frank said:

It was easy to understand, it was just a question of integrating it [...] I can remember reading it once, reading it twice, putting it down and then going back to it the next day having thought about it for a bit and thinking “right ok, that’s... I think that’s what that’s telling me,” [...]. I mean understanding it I think is on different levels. I mean understanding it in a simple way, that’s great, I think that’s relatively easy. For me it was about whether I could integrate what information they gave me and I think I was able to do that. I never gave it any thought at the time because I kinda thought I understood it and it also seemed to tell me [...] what I thought I was witnessing. So you know, I could see the relevance of it. I could see the fact that it was telling me that I was certainly active, I was more active during certain times of the day. [...] I think it’s more about integrating that and for me it was relatively easy to do that, partly because I was losing weight and I was achieving milestones. (Frank, age 49, BMI: obesity class II)

Similarly, Martin described how he was able to utilise the information to visualise his activity patterns and plan precisely when he could further increase his activity levels:

It just showed me when I was active and when I wisnae active, ken. I really thought that was great to see and [...] it made you realise “oh I could go and do something there, I could go and get this done, or I can dae [do] that”. [...] It was easy because it was a graph. It showed you, I think it was [...] green you were active [...]. It was different colours, ken, they showed you when you were active and when you weren’t [...]. (Martin, age 34, BMI: obesity class III)

Both Frank and Martin discussed how they had used the objective feedback to reflect on the changes they had made to their PA levels and further optimise their own understandings of their activity patterns and use this to make changes. Therefore, for some, the objective feedback on activity patterns provided a means of planning precisely where, at which parts of the day, further increases in activity levels could be incorporated. Ben described how the information could be used to “map your life”:

I think the most useful thing was the way that you had the timeline over a twenty four hour period. The fact that you could map your life to that data and you could think “ok then, when am I getting up? When am I going to work? When am I driving to work? When am I going for my coffee break or my lunch? Or when I’m flying, when I’m on the plane, when I’m going through security, when I’m at Heathrow [...] or more transitions than when I’m going at Glasgow.” It gave you something that you could really pin an activity to and therefore you could then make decisions based on it. [...] whether I was interpreting it right or wrong, [...] the way it was colour coded was good, the way that you could track it over a day or twenty four hour period was good. [...] I’m used to just looking at that type of, management information on a daily basis so it was very easy for me to make decisions based on it. (Ben, age 36, BMI: obesity class I)

Ben said he was familiar with using similar kinds of “management information” on a frequent basis which made it “very easy” for him to utilise the information as a behaviour change tool. Several men said the information encouraged them to not only increase their activity levels but also to decrease their sedentary behaviour at specific times throughout their daily lives. For example, Jeffrey (age 53, BMI: obesity class I) said: “the comparison between [...] the two sets o’ [of] readings [...] gave me a spur on as well [...] I was able to see the sedentary periods and [...] the less active periods.”

Overall, the comprehensive information displayed in the men’s post-programme feedback letters from the activPAL3™ provided the men with a useful and novel means of visually identifying specific times in their lives when they were most active or inactive. These men found the technological aspects of the feedback on their activity patterns to be innovative and greatly appealing as it was specifically tailored to them. They liked both the layout and presentation of the data and interpreted the information with ease. The information provided them with a lens through which they could learn more about their own behaviour and gain greater insight into their daily activity patterns. They found the information useful because they felt competent in their understandings of the data and enjoyed learning more about how they could further alter their lifestyles. Some of these men explicitly said they were used to working with similar forms of technology and therefore could easily interpret the information on their activity patterns. These factors prompted the men to actively reflect on their post-programme feedback and utilise the information as a behaviour change tool. The information also

informed them when they could reduce their sedentary patterns which were another novel and unanticipated feature of the feedback which some men mentioned during their interviews.

Overall, for some men the feedback was perceived to be ‘enlightening’ as it provided robust insight on their activity patterns by illustrating lifestyle changes they had successfully incorporated during the FFIT programme as well as indicating precisely where they could make additional improvements in future. Therefore, despite facing potential barriers to increasing their activity levels, such as working in sedentary environments, these men felt confident they could utilise their individual profiles to effectively implement further increases in their overall activity levels, and thus were more likely to harness the full potential of the post-programme feedback as a tool for behaviour change.

These findings are consistent with what SDT defines as being autonomy supportive. In accordance with SDT, three aspects are integral for autonomy support and self-determined behaviour: providing a meaningful rationale; acknowledging feelings; and supporting opportunities for choice and minimising control (Deci et al., 1994). According to Deci et al (1994), internalisation occurs in contexts or circumstances when at least two of the three facilitating factors, outlined above, are present. The information in the feedback letter was perceived by the men as being interesting and enjoyable to interpret and was relevant to them providing an important rationale for them to utilise the information further. The visual representations of their activity patterns provided the men with further options and opportunities to choose when they could alter their activity levels. Therefore, for some men the post-programme feedback supported further self-initiated decision-making. It is also important to note that the men who spoke about using the feedback as a behaviour change tool were able to confidently interpret the information. This point is crucial and could be viewed as further satisfying their perceived need for competence thus enhancing their willingness to actively utilise the feedback as a resource for behaviour change, consistent with SDT.

6.5.3 Durable evidence of the men's ability to change

The feedback letter was described as an enduring reminder or “record” of a specific time in the men's lives where they had successfully transformed their lifestyles. For example, Jeffrey commented:

It was like a period in my life where there were a lot of changes taking place. And that I suppose in some ways is a record of those changes. And [...] very good changes as far as I'm concerned. [...] So it was like a really good point in my life. And that is I suppose in some way is like a small record of it. [...] (Jeffrey, age 53, BMI: obesity class I)

Moreover, the feedback letter functioned as a durable piece of evidence or documentation of the men's achievements which served as a motivational ‘refresher’ that could be referred back to in future if they relapsed or fell back into unhealthy habits:

If I go back the way, I can always pull it out my drawer and go “this is what I was... last year.” I know I can do it, it's just doing it again. [...] It's there in black and white, I can go back and see it. If I go too far back the way I can say “well I've done it then, I know I can do it again.” Just... try and do it again, basically. (Andrew, age 41, BMI: obesity class II)

For Jeffrey and Andrew the feedback letter was a powerful representation and reminder of their achievements, a record or a symbol of what could be achieved and of men's competence in being able to alter their lifestyles and bodies by their own volition. The letter was viewed as being a durable piece of evidence that could be referenced again at any time as a tangible motivational aid, providing proof of their capacity to change. These findings are also congruent with SDT as the feedback letter functioned as an enduring source of competence support which these men could draw upon again in future as a resource to bolster their confidence in themselves and their ability to alter their behaviours by themselves.

6.5.4 Motivational prompts to maintain internal commitments post-programme

A few of the men expressed that they were motivated to maintain their lifestyle changes in response to the feedback letter due to the fact that it highlighted all of

the perceived efforts and resources (e.g. from the football club, the coaching staff and the researchers) devoted to helping them achieve their weight loss goals and adopt healthier lifestyles. For example, Ryan used the analogy of being part of a football team to articulate the commitment that he felt to the wider group of people who had invested in helping him to lose weight and adopt a healthier lifestyle throughout the programme:

It [the feedback letter] confirmed that the work that everybody put in maself, your own staff, the staff at [club03]. It showed that it worked, what they were trying to do obviously [...]. And I felt better 'cause I thought I don't wannae let people down thinking at the end o' week twelve here's a guy who's no done anything that week different, but it was still well up and everything I'd attempted to - or hoped to achieve - was, was fully justified. [...] here was something that I'd achieved [...] without having any doubt in ma [my] mind that it could be done. And I felt pleased for everybody that was involved because I felt a lot of people had put work in, givin' up their time tae, tae try and get people to be in a better frame of mind, and a better health [...] I suppose to put in simple terms: like, a football manager picking a team to win a game when he wins it he feels he's done his job. And I felt that everybody had, who had contributed to the course I could say well, we've proved what they've set out to do, they've done what they said could be done without tryin' tae kid us on. [...] If it was achievable for me, then I'm sure that anybody could achieve it [...]. And it [...] gave me a, an insight, a goal that if I've done this why am I gonnæ let it slip? And touch wood to date I huvnae [haven't] let it slip. (Ryan, age 54, BMI: obesity class III)

Similarly, Chris described being “resolved” to maintain his weight loss and increased activity levels post-programme due to an internal commitment to both himself and to the people (i.e. the club coach and the research staff) whom he perceived as being invested in helping him alter his behaviour during the programme:

I think what I have is maybe the Calvinistic part of the Scot, you know, is that I don't like letting people down [...] I'm quite resolved never to putting the weight back on again [...] so getting the feedback and all that stuff is, from my perspective is, you guys, you know, you and [club coach's name] and etc, put a fair bit ae [of] work into us, so the least I can do at the other end of that is [...] keep my side ae [of] the bargain [...] I mean, there's no point me walking away after 12 weeks and then just going back [...] to putting on the weight again. [...] So, so that was [...] a big huge motivator for me. But no, your [...] feedback, it probably came at the

right time [...] a few weeks after we've finished [...]. (Chris, age 58, BMI: overweight)

These men felt a strong commitment to both themselves and all of the other people involved throughout the duration the programme. These men did not want to feel like they had failed or let any of these people or the football club down by being unable to sustain changes achieved during the programme. The feedback letter was important as it served as a prompt or reminder of the commitments the men had made throughout the programme to both themselves and to the other people who were dedicated to helping them to improve their lifestyles throughout the programme. The men's commitments formed during the programme (i.e. to both themselves and to the wider group of people involved in helping them to implement healthier lifestyles) had been a powerful source of motivation for successfully implementing changes which also extended beyond the 12-week programme.

The language adopted by the men (e.g. "I don't like letting people down") is indicative of what SDT refers to as 'introjected regulation'. As defined earlier introjected regulation is when one's motivation is partially internalised and refers to when a specific action is performed out of a perceived desire to avoid feelings of guilt or to sustain feelings of pride or self-esteem. As outlined earlier in chapter two, introjected regulation can be a powerful driver for adopting particular behaviours when the behaviour is yet to become fully self-determined. In a setting where a leading social group or culture promotes or endorses an uninteresting behaviour, people have a greater capacity to internalise the initially externally regulated behaviour (Deci and Ryan, 2002). According to SDT this type of motivational regulation is most likely to occur in settings where one's needs for relatedness and competence are supported. However, behaviours that are introjected are thought to be less stable or enduring over time as are not fully integrated as part of the self.

These men above also spoke about making strong internal commitments to themselves suggesting that more autonomous reasons were also driving their sustained behavioural change. SDT posits that motivation can vary along a

continuum and people can therefore have both controlling and autonomous regulations for engaging in the same behaviours. However, it is the extent which either autonomous or controlling reasons for performing a specific behaviour are more dominant that determines whether or not the behaviour will be internalised and thus performed long-term. Therefore, once the need for autonomy becomes satisfied one can fluctuate between controlling (e.g. 'introjected regulation') and more self-determined forms of extrinsic motivation (e.g. 'integrated regulation'). Receiving the feedback letter post-programme motivated some men to maintain their efforts in order to avoid letting others down who were involved in helping them adopt healthier lifestyles during the programme. The feedback letter also reinforced the men's initial motivations for changing their behaviours during the early stages of the programme. Congruent with the SDT framework, these findings suggest that controlling forms of motivation were still important even after more autonomous forms of motivation became salient after the 12-week programme had ended. Thus, as noted by Ingledew and Markland (2008), controlling motivations for PA behaviour may not be detrimental as long as more autonomous or self-determined regulations are also present (Teixeira et al., 2012a).

6.5.5 Continued perceived support and connectedness associated with the feedback as a source of motivation

Some of the men said receiving ongoing correspondence as part of their participation in the programme was an influential source of encouragement and inspiration to sustain their healthier lifestyles once the 12-week programme had come to an end. For example, Ryan said:

[...] the fact that folk keep in contact with you, keep re-evaluating the, the information that was given to you, then it's only good for you it keeps you focused. (Ryan, age 54, BMI: obesity class III)

In this extract, Ryan mentioned that receiving further contact and evaluation through receipt of the feedback letter was positive and helped him to maintain his motivation to continue his healthier lifestyle habits after the programme had ended. Receiving the post-programme feedback letter was important to the men as they continued to feel consciously acknowledged and valued as unique

individuals. For example, Billy discussed being motivated in response to receiving the feedback letter due to the fact he continued to feel supported after the 12-week programme had ended:

I think [...] everybody did it for their own reasons and [...] would probably get support from, from their family an' [and] stuff like that. But just the fact that [...] somebody else has seen you on the journey [...] they know where you were at the start you know an' [and] then you finish at the end [...] it's always nice to be sorta nice an' [and] just say you know, "well done" [...] it's just a human reaction I suppose you know, it's always better tae [to] come fae [from] somebody else [...] the people on the programme as a whole [...] they were positive at the start and they were still positive at the end an' [and] [...] they helped you along the road you know, along the journey [...] people are still thinking about [about] it an' [and] you're still thinkin' yourself an' [and] you know [...] it keeps you sorta motivated a bit, tae [to], tae [to] continue wi' [with] it [...]. (Billy, age 52, BMI: obesity class II)

During his interview, Billy said that other men would "probably get support from, from their family", indicating the perceived importance of wider family support in facilitating the men's capacity to alter their lifestyles during. However, Billy explicitly said that he felt an additional source of support throughout the programme from the fact that other people (e.g. the research team) had taken an interest in him through the surveillance and objective monitoring of his activity/physical measurements. Billy felt as if he had been accompanied on his "journey" as these people had witnessed the changes he had made to his lifestyle and his body throughout the 12-week programme. Receipt of the personalised feedback letter reinforced that people from the programme were continuing to take an interest in him and provide support for his healthier lifestyle choices. This, in turn, consequently prompted him to continue his efforts after the 12-week programme had come to an end. Therefore, receiving the post-programme feedback letter showed the men that they were still valued and cared for as individuals even after the 12-week programme had ceased. Moreover, the personalised feedback ensured the men continually felt connected to the programme which also provided an important source of motivation for them to sustain their healthier behaviours long-term.

Overall, some of the men explicitly said they felt motivated in response to the feedback letter as they enjoyed receiving further personalised communication as part of their participation in the programme. Congruent with SDT, the feedback letter could be interpreted as being supportive of the men's ongoing need for relatedness. Social relatedness is the need to feel connected and understood by others and is proposed to be crucial for facilitating the internalisation of extrinsic motivation. According to SDT the needs of autonomy, competence and relatedness are necessary for optimal functioning and wellbeing. SDT also posits that health-related settings that facilitate people's experience of these three needs are crucial for behavioural adoption and maintenance (Ryan et al., 2008). Receiving the post-programme feedback letter could have supported some men's feelings of relatedness post-programme and thus was important for encouraging their desire to maintain changes in their behaviour long-term.

6.5.6 When and why the post-programme feedback letter was not useful

However, there were men who were less enthusiastic about receiving the post-programme feedback letter and explicitly said it had resulted in minimal or no subsequent impact on their behaviour. These men gave several different reasons as to why the post-programme feedback letter had not been perceived as useful. Some were more likely to cite specific aspects of the 12-week programme (e.g. the information on diet and PA) and/or the peer support (i.e. the ongoing weekly group sessions at the football club) as having the most significant impact on their lifestyle changes as opposed to the feedback letter. For instance, when Gary was asked if the post-programme feedback had any impact on his activity levels, he commented:

No, no, to be honest, I think that most of the changes that I've made have come from the sorta [sort of] week-on-week, being with everybody and then [...] there was different classes on diet, there was stuff on proteins, fats, good fats, bad fats, there was stuff on exercise as well, what's good exercise and I think all that sorta stuff more was a help because I was getting that sorta [sort of] drummed into me week in, week out, and it was those things that helped me to [...] change the way I did things. (Gary, age 50, BMI: obesity class I)

Similarly, Steven mentioned why he found the feedback letter less useful than other components of the programme:

[...] there was nothing that I wasn't expecting [...] "alright you know, I do sit down and do not a great deal an awful lot." [...] I suppose it's maybe a bit of a driver for you to carry on doing stuff [...] I wouldn't say it was you know it was key or anything [...] I wouldn't even go as far as saying it was motivating. It was just [...] a piece of data that kinda confirmed pretty much what I already knew. [...] I must admit I didn't take a huge amount of consideration in terms of the activPAL, [...] it didn't leave me kinda up nor down with it. I suppose because of the delay in getting it. [...] I didn't pay a huge amount of attention to it [...] I already had parts of the information basically when I do stuff and keeping track in my diary and using the pedometer [...] it's quite long in coming out [the feedback letter], it's not like you get [...] instantaneous kinda feedback. [...] [the] pedometer [...] you can see your progress [...] rather than waiting for a data set to be generated and sent out to you. [...] I don't think the [...] activPAL was specifically geared towards helping me. [...] The activPAL was a nice bit of data but I thought in terms of usefulness, it was probably more useful to the kinda researchers. (Steven, age 33, BMI: obesity class II)

Steven directly compared post-programme feedback with the pedometer which he had utilised effectively throughout the 12-week programme and was clear that the feedback letter did not provide any further capacity for increasing activity levels over and above the self-monitoring allowed by the pedometer. Steven said he appreciated receiving more comprehensive feedback on his activity levels and described the information as "a nice bit of data". However, he felt the feedback was of more utility to the "researchers". Jonathan similarly commented:

[...] to me it was quite a gimmicky thing. I don't mean that in a bad way, I was happy to get it but what's more important for me is that I can actually look at it and say "right, I'm now doing more exercise than I used tae, that's a plus. That's a plus point for me." [...] I could see my activity levels had improved but it took quite a bit of looking at [...] to suss it out to start with. [...] "right I was doing the xyz at this particular time, I must do more," I didn't actually think of it that way. [...] I actually looked at it more of "right that's great, that's clever. How does somebody get all that from that wee box?" [...] I think I woulda probably a' [of] taken more notice of [...] the visual part of it was just a wee bit more obvious. [...] especially guys my age, a wee bit more like idiots, 'cos [because] some of us are no' [not] as computer minded and looking at [...] reports and charts and things like that is - we don't do that on a daily basis so [...] for the visual aid to really work for me I would need somebody to go through it

with me and possibly highlight - I know that sounds silly because I should be able to look at that myself and think “right, that’s what it is,” but I didn’t do that and I wasn’t drawn to it. [...] it didn’t really make me think “I should go to bed earlier or I should increase exercise at a certain time in the day.” Whereas I think if I got maybe a one-to-one for [...] for somebody to point out “right, you’re going to your bed at midnight, that’s maybe something you should look at it. You’re only exercising for ten minutes every day, you should really look at increasing that.” You know [...] somebody going through that and can actually tell you what you’re doing and then suggesting an alternative to you. (Jonathan, age 47, BMI: obesity class III)

Jonathan’s extract illustrates that some were unable to accurately interpret the information included in the post-programme feedback letter, especially those less familiar with using technology on a regular basis. Furthermore, not all of the men reported being motivated to sustain their healthier lifestyles long-term in response to the feedback. For example, two men who did not achieve weight loss at 12-weeks reported that the feedback letter had some initial impact on their motivation to sustain their increased PA levels after the 12-week programme. They both said the motivation they experienced in response to the post-programme feedback was short-term and were unable to sustain their increased activity levels long-term, especially when faced with particular barriers:

CD: Do you think the feedback letter that you got has had any impact on your physical activity levels?

Donald: Not particularly since then, no. [...] I think after you participate in the FFIT programme you [...] try to maintain the good habits that you’ve learned maybe, but you know it just becomes something that you’ve done. You’ve moved on, you know? (Donald, age 49, BMI: obesity class III)

For a few men the feedback on their objectively measured activity levels post-programme was perceived as being more of an external reflection of their sedentary lifestyles and perceived the information as having less utility as a motivational resource. For example, Alan commented:

[...] it’s just a letter [...] you either are happy one way because you think, “oh this is an improvement,” or, it’s reinforcing again your lack of activity if you like [...] it’s like how you’ve got it colour coded in the red, green and [...] how much yellow there is [colours red, green and yellow were indicative of activity levels represented in the feedback letter] [...] it’s

showing you how inactive you are up to a point, you know. [...] Again, it's [...] the inactiveness is to do with modern society in which we live in, you know? (Alan, age 44, BMI: obesity class I)

During his interview, Alan described how the colours representative of his activity patterns could either be perceived as an “improvement” or as “reinforcing” particular restrictions or barriers to increasing his daily activity levels imposed by wider structural constraints (i.e. the physical environment). Alan felt less volitional and constrained by the choices he was able to make for himself within an environment that was perceived as prohibitive or oppressive of a more active lifestyle. Therefore, the post-programme feedback was perceived as disempowering for some men as it served to reinforce specific challenges faced with regards to altering their inactive or sedentary lifestyles. The feedback reinforced or consolidated their inability to successfully make changes to their lifestyles throughout the 12-week programme. For these men the information provided by the visual output from the activPAL3™ was perceived as being insufficient as either a motivational or behaviour change tool.

Overall, for some the objective feedback was perceived as failing to offer any further utility in addition to other aspects of the programme (e.g. self-monitoring with the pedometer and the peer support experienced during the 12-week programme) described as being more useful for motivating behaviour change. For these men the feedback was viewed as being less relevant or meaningful. They viewed the feedback as providing information more externally relevant to others (i.e. the researchers) rather than providing them with further opportunities to make additional changes to their behaviour. For others the feedback was perceived as being even less useful due to the fact they could not understand what it meant or how it specifically related to their own behavioural patterns. Receiving the feedback resulted in a negative impact as it undermined their feelings of confidence or efficacy in relation to being able to fully comprehend the feedback. Using SDT as a lens to interpret these data, the feedback was therefore not supportive of the men's feelings of autonomy or competence and therefore did not offer any further capacity as a motivational tool.

A few of the men who did not achieve their 5% weight loss goals post-programme were not as enthusiastic about the usefulness of the post-programme feedback compared to men who had achieved their weight loss targets. However, two of the men who did not lose weight reported being motivated to sustain their efforts in response to the letter initially but only in the short-term. For some the objective feedback consolidated external barriers to altering their lifestyles which they perceived as being insurmountable. Unlike some of the other men, the feedback did not provide them with further options for altering their activity patterns or behaviours post-programme. Congruent with SDT the post-programme feedback may have hindered the men's feelings of autonomy by emphasising constraints in their daily lives which they viewed as being uncontrollable. The post-programme feedback reinforced their inability to make changes during the programme and may have had less impact as a motivational or behavioural change tool. Therefore, the feedback failed to enhance the men's feelings of competence compared to men who were more successful in changing their behaviour and/or achieving their weight loss goals. Congruent with SDT the post-programme feedback may also have undermined their feelings of competence and/or autonomy, which, in turn, resulted in minimal impact on their motivation to make greater use of the feedback or incorporate further changes to their lifestyles after the 12-week programme had ended.

6.6 Summary

The findings reported in this chapter provide valuable insight into the ways in which men responded to novel and comprehensive personalised feedback on their objectively measured PA levels, within the context of a gender-sensitised weight management intervention. As this feedback is not part of routine deliveries of the FFIT programme (nor part of the delivery evaluated in the FFIT RCT), this analysis was intended to shed light on whether the incorporation of additional feedback may enhance effectiveness.

The feedback letter was perceived to be understandable, interesting and motivating by several of the men due to the fact that it was personalised to them. Several men explicitly said they were motivated by the information in their

feedback letter, particularly those who perceived themselves as having successfully achieved their weight loss targets at 12-weeks (see Figure 9, p. 217). The information in the feedback letter was a medium through which they could reflect on their achievements and therefore inspired the men to continue their healthier lifestyles (see Figure 9, p. 217). The post-programme feedback could be interpreted as providing important support for the men's needs of autonomy and competence which according to SDT are crucial for optimal forms of motivation.

For some, the detailed feedback on their activity patterns was utilised as a valuable and effective tool for further implementing changes to their activity levels (see Figure 9, p. 217). These findings are consistent with what SDT defines as being autonomy supportive. According to SDT, autonomous motivation occurs within environments or contexts where at least two of the following three facilitating factors are present: providing a meaningful rationale; acknowledging feelings; and supporting opportunities for choice and minimising control (Deci et al., 1994). The information in the feedback letter was perceived as being interesting and enjoyable to interpret and was relevant thus providing an important rationale for the men to utilise the information further. In addition, the visual representations of their activity patterns provided the men with greater options and opportunities to choose when they could alter their activity levels (see Figure 9, p. 217).

Men expressed that they felt motivated to maintain their lifestyle changes in response to the feedback letter as it reinforced the efforts and resources (e.g. from the football club, the coaching staff and the researchers) devoted to them during the programme (see Figure 9, p. 217). Furthermore, some men said receiving ongoing correspondence as part of their participation in the programme was an influential source of encouragement to sustain behaviour change once the 12-week programme had ceased as they continued to feel consciously acknowledged and valued as unique individuals (see Figure 9, p. 217). Therefore, concordant with SDT, the post-programme feedback could be viewed as being supportive of the men's need for relatedness.

However, for a few men the objective feedback confirmed their lack of success during the programme and highlighted wider constraints prohibiting them from making behavioural changes, particularly for men who did not achieve their 5% weight loss goals at 12-weeks (see Figure 9, p. 217). For others the information was viewed as being too complex to interpret and was perceived as less useful to them as either a motivational or behavioural change tool (see Figure 9, p. 217). Receiving the feedback resulted in a negative impact as it undermined their feelings of confidence in relation to being able to fully understand and therefore harness the benefits of the feedback. The feedback was therefore not supportive of their feelings of autonomy or competence and had minimal impact on their desire to make further use of the feedback or increase their activity levels after the 12-week programme had ended. Overall, the post-programme feedback letter was therefore more useful and meaningful to men who could proficiently interpret the information and perceived themselves as being successful during the 12-week programme. SDT provided a useful theoretical lens through which to interpret and understand some of these findings.

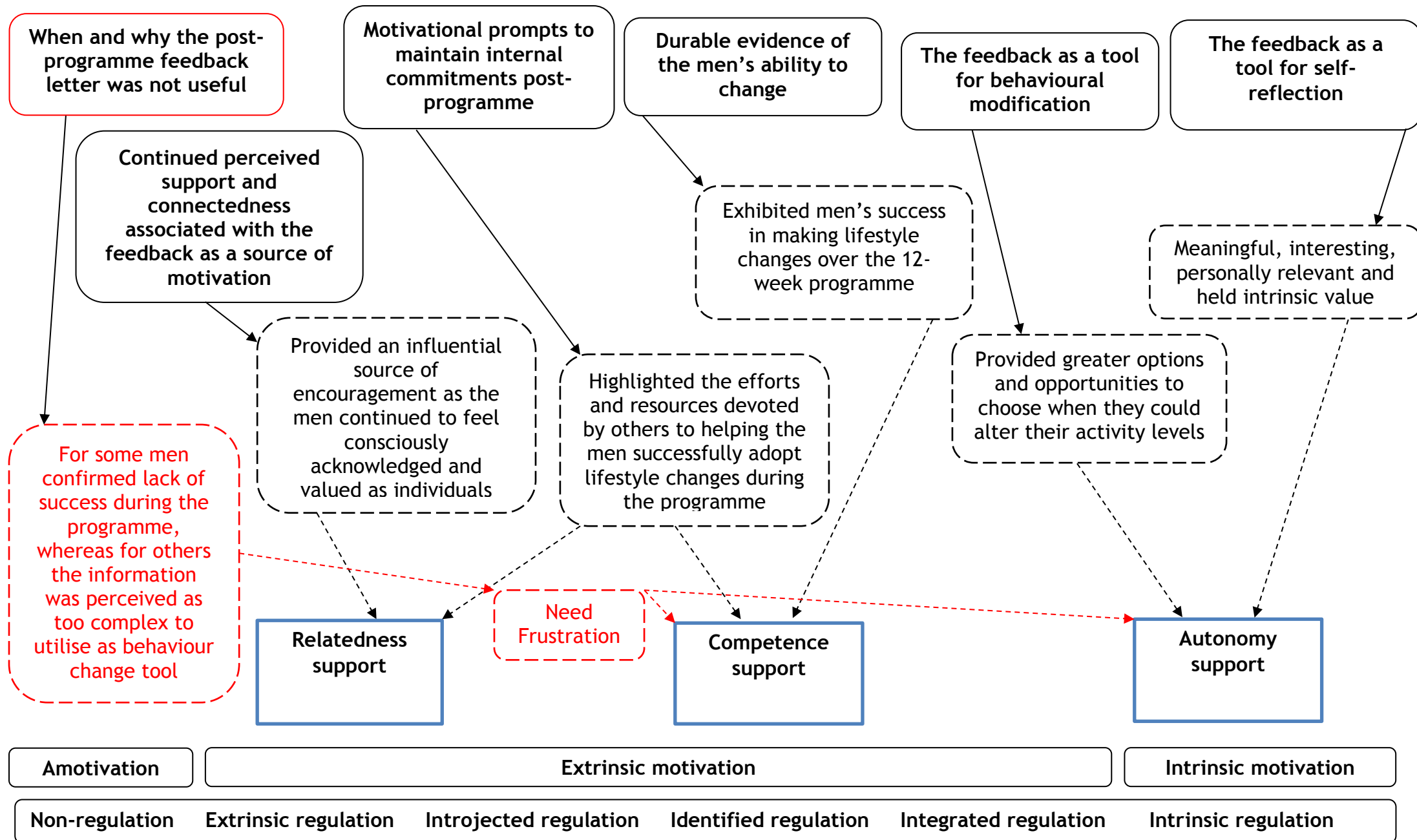


Figure 9 Men's utilisation of the post-programme feedback letter in relation to key theoretical tenets of SDT

Matrix experiences of wearing activPAL and receiving feedback.xlsx - Microsoft Excel				
<div> <div>Home Insert Page Layout Formulas Data Review View</div> <div> <div> Normal Page Layout Page Break Preview Custom Views Full Screen </div> <div> Ruler Formula Bar Gridlines Headings Message Bar </div> <div> Zoom 100% Zoom to Selection </div> <div> New Window Arrange All Freeze Panes Split Hide View Side by Side Synchronous Scrolling Reset Window Position Save Workspace Switch Windows </div> <div> Macros </div> </div> </div>				
H24 Did you have any preconceptions of what your feedback might be like?				
<div>8:16035F</div> <div>5% weight loss at 12-weeks = No</div> <div>Age = 47</div> <div>BMI (Baseline) = 32.02</div> <div>20 BMI Classification (WHO) = Obesity I</div>	Did you have any preconceptions of what the feedback might be like? I didnae. I didnae. I certainly didnae think I'd have been as inactive as it showed. And was the feedback as you expected? Nup. No, as I said, I thought the activity level would've been higher. It was phenomenal the amount ae periods ae inactivity on it that... And were there any things that surprised you about it? Just that inactivity. I couldnae believe how inactive I've become.	Do you think the feedback that you got from the monitor has had any impact on your physical activity levels? It did. It did at that time. As I say, I was very conscious o' it, right up until I went on holiday and then September when I come back... I had an exam tae do and things are changing at my work and it just became... put on the back burner. And then as the darker nights came in, everything just kind o' slips away. So... But it certainly did at the time. And at the time, in what ways did it impact on your activity levels? Well, I went oot for a walk. It made me, again, being aware that I was far too inactive and I had to dae something about it.	And how easy was that feedback to make sense of? Aye, it was a wee... you had tae read a wee bit intae it and then... but it wasnae that difficult. Once you've read the chart and read what the things meant, it was fairly simple tae follow after that. Do you think the information could be presented in a different way that would have been more helpful? No, it wouldnae have been any mair... no, certainly, it's helpful enough, it's easy enough tae understand once you've read what each part meant. And then when you looked at the times and you can see where you've been sleeping and a' that. Naw, it was fairly easy once you'd actually read it. But not that you need to kind o' dae anything else other than what's on there, I don't think there's any other format tae give the feedback on, no. And thinking about the feedback that you got, which parts or which part do you think was the most helpful or interesting for you? I think the fact that it's very simple - just tae eat less and dae some mair exercise. That was it in a nutshell. It's easier said than done, right enough. But the very simple thing is that - if you eat less and exercise more, you'll lose weight. And was that from, what you got from the feedback on	Thinking about the feedback the monitor, both before and after, of the feedback was unhelpful or None. No. Was it demotivating or demoralising for you? No' for me. It just gies you a jolt. It depe me, no, it motivates me. Some people r no' for me.
	Did you have any preconceptions of what your feedback might be like? None whatsoever. None. And was the feedback that you got as you expected it to be? I didn't know what to expect, to tell you the truth. You don't until you see it but I'm happy with what I got. But you don't expect it.	Do you think that the feedback letter that you got has had any impact on your physical activity levels? Don't think so, no. And why would you say that was the case? Not... as I said, I've not... I've fell back a bit so I've not actually done any more physical activity Excuse me. Excuse me. Aye. So it will eventually	And how easy was the feedback to make sense of? I think it was... good to think, it was, aye. It was good. And you thought it was quite easy to make sense of? Aye, I think so. Aye. (Do you...) I think it was. Do you think it could be presented in a different way that	In the letter that you got, Brian, there any ways in which any of the feedback was unhelpful or even negative? I don't think so, no. Don't think so. Was there anything that was demotivating or demoralising for you? No, don't think so, nope.

Figure 10 Screenshot of framework matrix: men's experiences of wearing the activPAL3™ and receiving the objective feedback letter post-programme

7 Chapter seven: Discussion

7.1 Introduction

In this chapter, I first summarise the findings presented in the previous three chapters and discuss how they address my overarching research questions posed in chapter two. Next, I discuss the findings in relation to the two areas of literature which have most informed my analysis, namely SDT and sociological understandings of masculinities. I also consider my findings in relation to other empirical work and how they contribute to gaps identified in existing literature. In this chapter I will also contemplate the main strengths and limitations of my research as well as recommendations for further research in future. Finally, I will conclude by considering some of the main implications of the study findings with regards to weight management, weight loss interventions, masculinities, objective feedback and health behaviour change.

7.2 Summary of findings in relation to addressing the overarching research questions

7.2.1 What are men's reactions and responses to receiving information on objectively measured health risk indicators within the context FFIT?

Chapter four addressed the first research question, illustrating the ways in which men talked about their experiences of being measured and given information on their weight and other health risk indicators within the context of the FFIT programme.

As described in chapter four, four main themes emerged in relation to the men's experiences of attending the baseline measurements prior to starting the programme. The findings revealed that a minority of men explicitly said they felt anxious or nervous about attending the measurements. Some of these men expressed embarrassment or shame with regards to their bodies and used language to suggest they had particularly low self-esteem and/or poor body image. Consistent with SDT (Deci and Ryan, 2000), feelings of shame and embarrassment are likely to impede one's feelings of competence, a crucial antecedent for the

adoption of behaviours necessary for weight management (e.g. PA and exercise). Thus, men who feel ashamed of their bodies and have low self-esteem and/or self-worth may feel ill-equipped with the skills necessary to effectively alter their lifestyles. However, others reported being more apprehensive or concerned about receiving information which confirmed their increased health risk to ill-health or obesity-related diseases. These men may also have lacked the necessary skills or abilities to perform behaviours crucial for effective weight management and the reduction of important health risk parameters (e.g. high blood pressure) prior to taking part in FFIT. In contrast, a few men said they were already familiar with having similar types of measurements performed in other settings which meant they were less anxious about going along to the initial baseline measurement session. These findings demonstrate the ways in which the range of objective physical measurements performed at the baseline assessments gave them information which they felt was useful in relation to their health status. Moreover, they suggest that for some men the range of measurements encountered at the baseline measurement session were novel to them and provided valuable information on specific health risk parameters they would not otherwise have access to.

The findings reported in this chapter suggest that several factors were important in ensuring the men felt comfortable while having their baseline measurements carried out. First, the professional football club setting was perceived as motivational, and the people present (i.e. other men 'like them', the fieldwork staff, and the community coaches) were seen to be offering both supportive and facilitative roles. The use of humour by the men was particularly important in reducing feelings of embarrassment or nervousness associated with having the measurements taken and they appreciated being around men 'like them' (i.e. similar body size/shape and fitness level). These findings are consistent with research conducted with men from other deliveries of FFIT which have reported the ways in which men utilised self-denigrating humour to facilitate discussion of sensitive issues such as weight or health-related issues (Hunt et al., 2014a). They are also congruent with the delivery style of the FFIT programme which actively

promoted the use of humour and camaraderie to encourage men's discussion of sensitive topics (Gray et al., 2013a).

Furthermore, the interpersonal style of the fieldwork staff was described as being crucial in relation to providing constant assurance, empathy and support throughout the measurement session which helped lessen feelings of anxiety or trepidation associated with being measured. The men reported how they perceived the fieldwork staff as having invested time into helping them by providing genuine interest and care. These findings are indicative of what SDT defines as relatedness support and are consistent with some of the ways in which Silva et al (2014) recommend that relatedness support should be promoted. The men described the information as meaning more to them within the context of the programme measurement sessions compared to attending a regular health screening or appointment with their doctor. These findings imply they were more cognisant of the perceived meaning of their health-related measurements and how these specifically related to their individual lifestyles and behaviours. This perhaps resulted in a move away from more externally based beliefs about their health to a more internal focus. These findings are consistent with what SDT (Deci and Ryan, 2000) defines as providing a meaningful 'rationale' which is thought to be a critical component of an autonomy supportive environment. Overall, these findings demonstrate the ways in which the setting (i.e. the professional football club) and the people within in it (i.e. the fieldwork staff and other men enrolled on the FFIT programme) were important inter-related factors that ensured the men felt at ease and relaxed within a situation that could have been perceived as threatening.

The men's reactions to being given feedback on their objective physical measurements during the baseline measurement session included a wide range of responses. Some men used emotive language (e.g. shock or disgust) to describe how receiving information on their indicators of health risk made them feel. The men also emphasised the value of being provided with information on these health parameters that they could use as a '*benchmark*'. This provided them with a means of tracking or gauging any potential changes in their health or weight-related metrics as they progressed throughout the 12-week programme that

extended beyond simple changes in body weight. Receiving objective feedback on these health-related metrics in '*black and white*' was viewed as being robust and undeniable; for some this meant becoming more prepared, resolved or ready to initiate behaviour change. However, the findings also suggest that some men were critical about some of the information they received on their physical measurements, particularly in relation to BMI. These findings are consistent with previous assertions that men are more likely to challenge biomedical definitions of 'normal weight' status (e.g. Gray et al., 2011) and be content with their size when overweight or obese (e.g. Monaghan, 2007).

Overall, the findings suggest that for some men receiving information on their objective physical measurements within the context of the FFIT programme consolidated their initial expectations about their weight or health risk status. This, in turn, confirmed to them they had made the *right* decision to register on the programme. However, for others receiving the information on their objective health risk parameters was perceived as an important catalyst or motivator to take action and consequently embrace behavioural change.

Despite the fact that only a few men explicitly discussed feeling ashamed or embarrassed with regards to attending the baseline measurement session, my findings shed important light on the ways that some men might feel uneasy and reluctant to attend similar settings or weight loss programmes where their bodies are put under perceived scrutiny. As outlined earlier, SDT stipulates that autonomy support is vital for behaviour change. However, the ways in which wider stereotypes and social ideals relating to body shape have not been fully investigated as factors that may inhibit autonomy support among men and women. Sabiston et al (2009) conducted a qualitative study to explore experiences of PA motivation and change in a group of overweight women taking part in a 12-week PA intervention. Grounded in SDT, their findings convey that some women were motivated predominantly by extrinsic or controlling factors such as aspiring to societal standards pertaining to feminine beauty ideals and athleticism. These women interviewed in this study described being anxious about their physical appearance in social situations and felt that other people viewed them as being unfit and unhealthy as consequence of their overweight status. Hence, factors

such as poor self-image and self-esteem may hinder psychological need satisfaction and autonomous forms of motivation (Sabiston et al., 2009). These findings are consistent with other qualitative work conducted in PA settings. Huberty et al (2008) conducted a qualitative study examining factors related to women's adherence to exercise or PA after taking part in a 12-week structured PA behaviour change programme. They reported that low self-worth and poor body-image prevented some women from taking part in PA and were less likely to adhere to their PA recommendations. Similar findings were reported by a recent quantitative study suggesting that social physique anxiety and self-worth are associated with less self-determined motives for engaging in PA behaviour (Thøgersen-Ntoumani and Ntoumanis, 2006). These findings are consistent with previous assertions that dissatisfaction with body-image may result in adverse mental health issues including diminished self-esteem and self-worth among men and women (Furnham and Greaves, 1994).

The findings of the current study suggest some men who are overweight or obese might perceive themselves as falling short of dominant idealised standards in relation their body shape and consequently may feel increased feelings of dissatisfaction with their own bodies resulting in decreased self-esteem and self-worth. This, in turn, could result in some men wanting to lose weight or adopt weight loss behaviours (e.g. PA) for predominantly extrinsic reasons or result in amotivation. Therefore, broader understandings of masculinities are also important when considering these findings. Tiggemann et al (2007) found that bodily dissatisfaction with thinness was negatively correlated with self-esteem among men. Their findings also revealed that being thinner and more muscular were shared ideals among both heterosexual and homosexual men. McCabe and Ricciardelli (2004) conducted a review of men's body image and found that while adolescent boys are more concentrated with enhancing muscle mass, adult men were more concerned with losing weight and increasing muscularity. As outlined earlier, men's dissatisfaction with their bodies has been associated with several negative health consequences, including steroid use, obsessive exercise behaviour, eating disorders, and depression (Tiggemann et al., 2007). These findings are consistent with suggestions that dominant sociocultural ideals for accepted and

desired masculine bodies in Western countries have shifted over the past few decades (e.g. Pope et al., 2000b) with men becoming more concerned with body-image (e.g. Grogan and Richards, 2002). Ideals such as leanness and muscularity are reinforced by men's health magazines and other popular media as appropriate ways for men 'to do health' while simultaneously reinforcing an alternative form of traditional hegemonic masculinity associated with an array of adverse health behaviours (Stibbe, 2004). While some overweight or obese men may appear to show a desire for an aesthetically lean and muscular physique, few are motivated to engage in weight loss efforts primarily for these reasons alone (Sabinsky et al., 2006). The current findings suggest some men who are overweight or obese might perceive themselves as falling short of current idealised standards in relation to their body shape and consequently may feel increased feelings of dissatisfaction with their bodies and decreased self-esteem.

The findings of this study highlight the importance of providing sensitive information in relation to weight and health to men within an environment perceived as being congruent with their identities. These findings are concordant with previous work that has demonstrated how FFIT enabled men to 'bolster' their 'masculine capital' (de Visser and Smith, 2007, de Visser and McDonnell, 2013) through their affiliation with the professional football club (Hunt et al., 2013, Hunt et al., 2014a). Therefore, the experience of being measured and provided with sensitive information in the context of FFIT was important with regards to making the men feel comfortable, hence more willing to enact subsequent behaviour change.

As outlined above, receiving feedback on their weight status and/or being labelled as 'clinically obese' was an important motivator for several men and confirmed their reasons for enrolling on the FFIT programme. Some expressed that they knew they were overweight but had not realised the extent to which they were overweight or obese. These findings are also consistent with the concept of optimistic bias, where people are more likely to underestimate their own personal likelihood of developing ill-health or disease (Weinstein, 1982). According to this principle simply being aware of the generic population risk to disease is insufficient to motivate individual behavioural change. Receiving information on

their measurements that was perceived as being recorded or written down in '*black and white*' was important as prompted them to take responsibility for their health. For some, receiving information on their weight status and other indicators of health risk (e.g. blood pressure) were powerful motivators in themselves and increased their resolve to adopt healthier lifestyles. These findings are consistent with previous research indicating that medical events or triggers can serve as important motivators for initiating and maintaining long-term weight loss (Gorin et al., 2004, Wing and Phelan, 2005). Ogden and Hills (2008) propose a model of sustained behaviour change which emphasises the importance of life events (e.g. relating to health) in prompting behaviour change. For some men receiving information on their health risk indicators, at the baseline measurements sessions, could have functioned as a medical or health trigger consolidating their risk status and motivating them to adopt healthier lifestyle behaviours. These findings also resonate with previous suggestions that some men prefer more direct and result-oriented styles of communication (e.g. Oliffe and Thorne, 2007) and are more likely to react to information on weight status that is perceived as upsetting or hurtful (Gray et al., 2011). However, as discussed above, these findings also suggest that caution is warranted when providing sensitive information that may undermine men's feelings of self-esteem and self-worth.

The men valued receiving information on a range of physical assessments at the baseline measurements. The objective measures gave them a further means of assessing their perceived disease-risk status. The objective physical measurements also provided an important means of monitoring their own progress and functioned as a '*benchmark*'. These findings are analogous with a recent qualitative study which examined overweight and obese participants' experiences of a commercial weight-loss programme (Allen et al., 2015). Allen and colleagues reported that the objective physical measurements experienced at baseline and follow-up assessments during the programme, functioned as an important means of creating awareness of disease risk among participants and provided them with a new language through which they could assess their progress extending beyond weight alone (Allen et al., 2015).

However, despite finding out they were ‘clinically obese’ a few men questioned or rejected the accuracy of the BMI as a valid indicator of health risk. These findings are consistent with previous research that men often underestimate their own vulnerability to obesity-related diseases (DeVill-Almond et al., 2011). It has been suggested that men often refute their BMI status and are often not motivated to alter their weight status until they are clinically obese (Gray et al., 2009, Gray et al., 2011). A few of the men in the current study directly cited professional athletes such as rugby players whose BMI would classify them in the obese categories consistent with previous work (Monaghan, 2007). Concerns about being perceived as being too thin may contribute to men being more unlikely to engage in weight loss efforts (Kiefer et al., 2005, Sabinsky et al., 2006, Tiggemann et al., 2007, Monaghan, 2007). Cultural constructions of masculinity therefore may present significant barriers for men in relation to losing weight. Men appear more likely to deny their risk status with regards to obesity-related diseases and present wider challenges with regards to devising effective strategies to motivate men to engage with weight management initiatives.

Overall, these findings illustrate the importance of translating sensitive health or weight-related information to overweight and obese men, within settings and environments that are consistent with their identities as men.

7.2.2 How do men utilise pedometers as motivational behaviour change tools during and after taking part in FFIT?

The findings presented in chapter five addressed the second research question, and thus included an analysis of how men discussed using the pedometer to self-monitor their steps and how it helped them to internalise motivation to continue their activity levels.

Consistent with Hunt et al (2013), utilising data from similar men taking part in earlier deliveries of FFIT, most men interviewed considered walking to be a valuable and effective form of PA for increasing their fitness levels and accruing health benefits. They generally reported few problems with using the pedometer and felt that it was a convenient and non-intrusive means of self-monitoring their

activity levels. At the beginning of the programme the pedometer was said to be essential in providing the men with awareness of their activity levels and was important in confirming how inactive some men were in their daily lives. The objective feedback from the device provided them with an accurate representation of their activity they could not contest. These findings are comparable with previous research with men taking part in an earlier delivery of FFIT, which found that men viewed the feedback from the pedometer as being ‘indisputable’ (Hunt et al., 2013).

During the 12-week component of the programme the pedometer was said to be vital as it enabled the men to objectively track their activity levels, and progress toward increased activity levels on an ongoing daily basis. Their accounts were suffused with references to self-regulation, self-monitoring, and goal setting, especially when describing their experiences of the early phases of the 12-week programme. These findings suggest that they had incorporated many of the key messages and strategies they could use to support their efforts to enact behaviour changes. For some men the desire to achieve their step goals helped them to overcome specific challenges or barriers to becoming active. Several men emphasised the importance of the objective feedback as being ‘*readily accessible*’. Most men said they perceived the process of self-monitoring their activity an enjoyable or rewarding experience. The objective representation of their activity levels (i.e. number of steps achieved) enabled the men to visualise their steps taken, which, in turn, was an important motivator for the men to achieve their step-based goals. Achievement of their PA targets provided the men with feelings of achievement and satisfaction which prompted them to persevere with their step targets. The men’s feelings of satisfaction associated with achieving their individual PA goals were instrumental in prompting further engagement with the walking programme and their motivation for continually increasing their activity levels. The feedback was often described as ‘*proof*’ not just of whether or not they had been successful in increasing their PA levels, but that this was a behaviour that they could change and which seemed unexpectedly achievable. Some men described the importance of their PA behaviour being self-initiated, under their own volition and not feeling coerced to increase their

activity levels. In accordance with SDT, social conditions and external events (e.g. feedback) supportive of the basic needs for competence and autonomy are hypothesised to be conducive of intrinsic motivation (Deci and Ryan, 2000). In line with SDT, the activity of self-monitoring with the pedometer satisfied the men's feelings of competence and gave them optimal challenge which was described as being 'enjoyable' in itself.

In explaining how they remained committed to achieving their PA goals some men used language that personified the pedometer (e.g. 'conscience'). These men portrayed the pedometer as a facilitator that motivated them to stay focused on their PA targets and internalise necessary habits and skills (i.e. self-monitoring) into their daily lives. The language used by some men to personify the pedometer is consistent with what SDT defines as '*introjected regulation*', whereby behaviour is motivated by internal rewards or punishments. Introjected behaviour is the first internalised form of extrinsic motivation where the value of the behaviour has been partially internalised but remains relatively unstable as it has not yet been fully assimilated as part of the self. These findings insinuate that the men's primary source of motivation to use the pedometer and achieve their PA goals was avoidance of guilt and not necessary because they desired to do it.

A few men described how the pedometer functioned as a symbolic representation of their wider intentions to adopt healthier lifestyle behaviours. One of the men explicitly described how the device was like a 'totem' or 'badge' that was portable, which he could carry around with him as an important *symbol* of his achievements over the course of the programme. The pedometer served as an external symbol of the men's success, beyond the literal expression of their activity levels, which continued to remind them to extend their healthier lifestyles beyond the programme. These findings are also consistent with SDT as the device continued to reinforce the men's feelings of competence and provided a portable motivational prompt which could be worn beyond the programme. The device also symbolised the fact they now held different values and beliefs which transcended beyond self-monitoring and into other aspects of their lives. This is indicative of what SDT refers to as '*integrated regulation*' whereby new behaviours have become assimilated alongside one's core values and beliefs. Therefore, the

pedometer functioned as a physical reminder of the men's newly integrated behaviours and their success with regards to achieving certain milestones (e.g. tangible changes in clothing and appearance).

However, a minority of men were less positive about using the pedometer as an effective means to increase their activity levels, as a consequence of their step-based targets reaching a level they felt were unattainable. Some of these men perceived the pedometer as being controlling or oppressive. Thus, for some the pedometer was perceived as more of a tyranny rather than a positive tool for behaviour change. This may have negatively influenced their decision to continue wearing the pedometer and perhaps contributed to their subsequent disengagement with their step goals. According to SDT, conditions or events perceived as undermining feelings of competence and autonomy are thought to hinder intrinsic motivation and the internalisation of extrinsically motivated behaviours. Thus, men who were unable to achieve their step-based goals or felt pressured to achieve unattainable goals, were likely to have become amotivated and therefore were void of both extrinsic and intrinsic motivation for continuing use of the pedometer.

Other factors were integral to motivating the men to use the pedometer as a self-monitoring tool during the 12-week programme. The men described the setting (i.e. the professional football club) and the people within it (i.e. other men 'like them' and the community coaches) as being instrumental in their initial motivation to engage with certain parts of the programme (i.e. the pedometer-based walking programme). These factors were important contributory factors with regards to the men's internalisation of their motivation to adopt the pedometer as a self-monitoring tool both during and after taking part in the 12-week programme. As discussed earlier, people are also more likely to initially engage in an externally prompted activity they view as being endorsed by others (e.g. a peer group, society or culture) they feel or desire to feel related or connected to (Ryan and Deci, 2000b). Therefore, the internalisation of the men's drive to increase their activity levels was potentially facilitated by their eagerness to feel connected to the professional football club they were devoted to and which they viewed as

being responsible for endorsing the various components of FFIT (i.e. the pedometer-based walking programme).

In keeping with SDT, the men reported being motivated to self-monitor and report back to the group their progress in order to demonstrate their ability to achieve their step-based goals and receive positive feedback from the group (which would increase feelings of competence), as well as to feel connected (i.e. relatedness) to a group they valued. Therefore, for some men their motivation to use the pedometer as a self-monitoring tool, during the 12-week programme, had become partially internalised but remained reliant on the external recognition and comparison with the rest of the group. These findings are consistent with the form of behavioural regulation SDT defines as being introjected. For example, some men appeared to have been motivated to use the pedometer by a desire to report back to the group to avoid guilt (i.e. letting the group down) or sustain feelings of pride (i.e. being seen by others in the group as being able to achieve their step-based targets).

The weekly group sessions during the 12-week programme were also very important in providing ongoing inspiration and motivation to the men, particularly in respect to developing the habit of using the pedometer to self-monitor their activity levels as well as overcoming barriers to implementing other important changes to their lifestyles. The perceived support from other men on the programme, who were perceived as going through a similar/shared experience, and the community club coaches during the 12-week programme, were vital in providing the necessary 'motivational climate' in which the men could internalise the changes.

Some men continued to use the pedometer after taking part in the 12-week programme. For others it served as a trigger for them to progress to more sophisticated technologies (e.g. digital fitness-related trackers or mobile phone applications) as a means of quantifying more comprehensive activity/exercise related metrics after the programme. These men remained dependent on quantification but were explicit about the enjoyment of the tangible evidence provided by these technologies, particularly on their success and achievement.

Hence, these men appeared intrinsically motivated to continue their active lifestyles as a result of the enjoyment associated with self-tracking.

In contrast, men classified as ‘ultimately internalised’ no longer felt the need to continue self-monitoring their activity levels with objective technologies after the 12-week programme had ended. These men appear to have successfully assimilated and integrated their new behaviours with their identities and values. Their accounts suggest they had fully internalised their motivation to continue their activity levels and felt a sense of mastery or efficacy over their abilities (i.e. knew when they had achieved certain PA targets without needing to refer to external technology). Many of these men described taking up alternative forms of activity which they enjoyed and explicitly discussed the benefits associated with living a more active lifestyle, losing weight and feeling better within themselves. However, for these men the pedometer had been instrumental in the early phases of the programme in enabling them to experience the tangible benefits of becoming active (i.e. feeling fitter/weight loss). These factors, in turn, had motivated them to further develop autonomous self-regulation, consistent with SDT.

However, men classified as having ‘controlled regulation’ reported not having the same levels of motivation to maintain their activity levels or continue to use the pedometer once the 12-week programme had ended. For them, any changes adopted appeared to be more reliant on external factors, such as the football club and/or the peer support offered by the other men and/or community coaches during the weekly group sessions. These men described a lack of impetus to sustain their activity levels or use the pedometer outside of the context of the 12-week programme. Congruent with SDT, the process of internalisation requires fulfilment of the basic needs of autonomy, relatedness and competence. For these men the relatedness support afforded by the other men on the programme and by the coaches at the weekly group sessions was of paramount importance. Thus were unable to move beyond controlled motivation (i.e. external or introjected regulation) and fully internalise their motivation to continue their activity levels once the 12-week programme had ceased.

Qualitatively examining overweight and obese men's experiences of using self-regulation tools and strategies within a weight management programme enabled me to gain insight into the underlying motivational processes involved in behaviour change. These findings contribute to the literature and build on previous work that have qualitatively explored motivational processes in relation to behaviour change in other PA and weight management settings (e.g. Huberty et al., 2008, Kinnafick et al., 2014, Sabiston et al., 2009). I will now discuss my findings in greater detail in relation to other empirical findings and theories of behaviour change.

Pedometers have been shown to be effective motivational tools (e.g. Bravata et al., 2007) and previous research has revealed the importance of self-monitoring and other self-regulation strategies as a means of increasing PA levels (e.g. Michie et al., 2009). Previous findings have shown that pedometer-based programmes are effective in helping previously inactive men and women increase and maintain PA levels over 12-months (Fitzsimons et al., 2012). However, the underpinning self-regulatory and motivational processes that operate in relation to pedometer use following participation in pedometer-based walking programmes are not currently well understood. The findings above are consistent with current understandings of behaviour change that posit self-regulation strategies as being crucial to the volitional phase of behaviour change (Schwarzer, 2008, Sniehotta et al., 2005a).

The findings of this study build on previous studies that have qualitatively explored the motivational dynamics underpinning PA behaviour grounded in the SDT framework (e.g. Sabiston et al., 2009). However, the majority of these studies have been conducted with samples consisting predominantly of female participants. Consistent with SDT, previous qualitative work has indicated that motivational regulations underpinning PA can become internalised depending on the satisfaction of the needs for autonomy, competence and relatedness in particular settings (Kinnafick et al., 2014, Sabiston et al., 2009). Moreover, previous findings have demonstrated that satisfaction of the needs for competence and relatedness are crucial to the initial adoption of PA behaviour, whereas satisfaction of the need for autonomy appears more important in maintaining PA behaviour over time (Kinnafick et al., 2014, Sabiston et al., 2009). These

processes are consistent with the theoretical underpinnings of SDT suggesting that motivation for PA behaviour can shift from being extrinsic to intrinsic over time. Deci and Ryan (2000) stipulate that autonomy is vital for internalisation, therefore is more likely to emerge in the later phases of behavioural change. However, it is argued that autonomous reasons for performing PA must be experienced when newly adopting PA or exercise behaviours such as valuing certain outcomes (Teixeira et al., 2012a). At this point cognitive factors such as attitudes and weighing up the pros and cons are vital as actual experiential knowledge of PA or exercise behaviour might be lacking (Teixeira et al., 2012a). Consequently, if autonomy is not experienced one is more likely to remain focused on extrinsic or more controlling reasons for participating in PA or exercise-related behaviour and therefore unlikely to be sustained long-term.

These theoretical understandings of motivation are consistent with the accounts of men in the current study, particularly in relation to their decisions to use the pedometer as a motivational tool. During the programme some men spoke about the importance of being perceived by others as able to keep up with their PA and step goals and seemed to feel accountable to the other group members. Therefore, feelings of competence (demonstrating their ability to achieve their step goals and receive positive feedback from the group) and relatedness (feeling connected to a group they valued) were satisfied within this setting. Their behaviour was regulated by a desire to report back to the group in order to avoid feelings of guilt or maintain feelings of pride. Consistent with SDT, the men had partially internalised their motivation to use the pedometer and sustain their walking behaviour. Similar findings have been reported in other qualitative research. Kinnaifick et al (2014) conducted qualitative interviews among a sample of 15 women taking part in a 10-week, walking programme delivered as part of a workplace intervention. These authors reported that introjected regulation in the form of feelings of guilt and obligation to attend a walking programme were important factors in the adoption of PA behaviour.

In the current study, men classified as 'controlled regulation' found the pedometer ineffective as a self-monitoring tool and were less likely to have continued using the pedometer after the 12-week programme had ended. These men appeared

more reliant on external factors for motivation such as peer support from the weekly group sessions. These findings are also comparable with other research which has qualitatively explored the motivational processes related to PA behaviour. Kinnafick et al (2014) reported that sources of support were the important factors associated with the adoption and maintenance of PA behaviour during a walking programme. However, reliance on support during the programme was reported among participants who did not adhere to their PA recommendations after taking part in the programme, consistent with my findings outlined above. These findings are consistent with other quantitative research indicating that reliance on support from other people within an intervention without experiencing autonomy was associated with introjected regulation (Markland and Tobin, 2010). Therefore, the current findings extend previous research and suggest that reliance on others during an intervention without experiencing the needs of autonomy and competence might contribute to subsequent disengagement after the programme and decreased impetus to continue using important self-regulatory strategies.

The findings of this study extend previous work (i.e. Hunt et al., 2013) and suggest that the pedometer was an extremely important piece of technology that empowered men by providing them with the ability to internalise self-regulatory processes. The findings illustrate the ways in which the men experienced feelings of achievement when meeting their PA targets as indicated by the feedback from the pedometer. The device was thus an important means of satisfying their needs for competence and autonomy, critical components of self-determined motivation. However, relatedness support and the autonomy-supportive climate (i.e. from the other men taking part in FFIT and the community coaches delivering the programme) experienced during the programme were integral to the men's initial motivation to adopt important strategies for self-regulation such as self-monitoring with the pedometer. These findings are consistent with SDT which posits that autonomy-supportive environments are crucial for the internalisation of extrinsic motivation and self-determined forms of self-regulation (Deci and Ryan, 2008a).

During the programme, feelings of enjoyment associated with achieving their PA goals alongside experiential benefits of becoming more active (e.g. feeling healthier, greater vitality and physical changes in their appearance) prompted

them to continue their efforts. Consequently, some men become motivated to continue their active lifestyles for more intrinsic reasons thus relying less on extrinsic prompts, such as the objective feedback from pedometer, after the programme had ended (i.e. those classified as 'ultimately internalised'). For some men walking continued to be their preferred form of PA after the programme had ended, whereas others were able to access new found activities and pursuits which they enjoyed. However, some men continued to self-monitor their PA levels beyond the programme as it was something they enjoyed doing, hence were autonomously motivated to continue their activity levels. These findings indicate that as the programme progressed more autonomous reasons for performing PA become more important. These findings are in keeping with previous research demonstrating the importance of need satisfaction in facilitating autonomous forms of motivation in relation to sustaining PA levels. According to Sabiston et al (2009), participants displaying feelings of competence, social connections and personal control reported continued PA following participation in a 12-week PA intervention. Kinnafick et al (2014) reported that participants demonstrated autonomous motivation for PA during a walking intervention. Moreover, they discussed how some participants displayed identified regulation such as recognising the health benefits of PA, whereas others described feelings of enjoyment associated with walking behaviour itself, consistent with the accounts of men in the current study. Similarly, Huberty et al (2008) reported that following participation in a 12-week PA behaviour change programme, women who successfully adhered to PA recommendations were motivated by an intrinsic desire to improve their quality of life. When performing PA and exercise these women felt good about themselves and their health, thus were motivated to continue their efforts long-term. Other important factors associated with PA maintenance included; exercise enjoyment, accessing social support, emphasising the need to exercise above other commitments, maintaining a healthy body-image, and developing self-regulation skills. Huberty et al (2008) reported that self-regulation strategies such as goal setting were found to be particularly valuable in helping these women maintain activity levels. They experienced feelings of achievement when specific activities became more achievable, comparable to the men's accounts outlined above in the current study. The current findings imply that goal

setting appears beneficial for adopting PA behaviour (i.e. for enhancing feelings of confidence and competence) but less useful for maintaining PA behaviour (i.e. when more intrinsic factors such as enjoyment and valuing of behavioural outcomes are more salient). These findings resonate with current understandings of behaviour change suggesting that goal setting may be more effective in facilitating the initiation of behaviour change, whereas it appears to be less useful for sustaining changes longer term (Dombrowski et al., 2012).

Overall, the findings of this study highlight the importance of self-regulation strategies (i.e. self-monitoring and goal setting) in helping overweight and obese men increase their activity levels. Consistent with SDT, these findings suggest why these techniques are important particularly with regards to satisfying basic needs and instilling more autonomous or self-determined forms of motivation associated with initiating and sustaining long-term PA/exercise behaviour.

7.2.3 What are men's reactions to receiving personalised feedback on their objectively measured activity patterns after taking part in FFIT?

Chapter six examined the third and final overarching research question. The findings reported in this chapter provide insight into the ways in which men who had participated in the 12-week FFIT programme, described their experiences and their reactions to receiving detailed feedback on their objectively measured activity patterns included as part of a personalised feedback letter that was sent to them after the 12-week programme had ended.

The first section of this chapter examined men's experiences of wearing the activPAL3™ physical activity monitor to objectively record their activity levels. Most men described wearing the device as being a relatively positive experience. Some were more enthusiastic about wearing the device than others. This was mostly attributed to technological aspects of the device, particularly the anticipation that it would provide them with objective information on their own activity patterns which were irrefutable. Unlike the pedometer, the activPAL3™ was worn continuously directly next to the skin for 24 hour monitoring. Consequently, some men found that it took time for them to adapt to wearing it.

However, a few found wearing the activPAL3™ problematic and reported more negative aspects associated with wearing it. Examples included: irritation or adverse skin reactions to the adhesive used to affix the activPAL3™ or the device coming loose, particularly during increased physical exertion.

The men's expectations of receiving the post-programme feedback letter varied. Some men had more positive expectations and anticipated the information would reinforce the positive changes they had made to their lives during the programme. These were more likely to be men who perceived themselves as having successfully lost weight or achieved their weight loss goals. In contrast, some men had fewer expectations with regards to what the feedback might be like. They hoped that it would demonstrate at least some improvements consistent with their efforts during the course of the programme but were less sure about what the feedback would actually entail. However, some men were less enthusiastic about receiving the post-programme letter. Furthermore, they were less likely to discuss changes they had successfully made during the programme and explicitly discussed greater external barriers in relation to increasing their activity levels.

The findings outlined in this chapter explored the men's understandings and meanings of the content of the feedback letter. There were a range of responses with regards to the men's interpretation and comprehension of the feedback on their activity levels. Some men found the information relatively simple to interpret. A few men were particularly enthusiastic about the presentation of the feedback letter and specifically liked the use of different colours to illustrate their activity patterns. In contrast, others viewed it as being too complex compared to other forms of objective feedback they had received as part of the programme and said that it was not readily interpretable. The men displayed a range of responses to the information in the letter depending on whether or not they perceived themselves as being successful during the programme. Detailed analysis revealed four main types of meanings attributed to the feedback: 'transformative', 'celebratory', 'confirmatory' and 'disappointing'. Some were particularly positive about receiving the feedback letter and perceived the information as being indicative of the 'transformative' changes they had made both physically (i.e. weight loss) and behaviourally (i.e. increased activity levels). A few described the

information in the letter as being ‘celebratory’ or congratulatory of their efforts during the programme. The majority of men said it was important to receive ‘confirmatory’ objective feedback that provided them with ‘proof’ of their efforts and confirmed their participation in the programme had been a worthwhile endeavour. In contrast, a minority of men said the feedback was ‘disappointing’ and were more likely to be men who were less successful in making changes to their lifestyles during the programme. These men described being dissatisfied in response to the information as it consolidated their lack of progress during the 12-week programme.

The men described using the post-programme feedback letter in a variety of ways depending on their ability to make sense of the information and whether they perceived themselves as having been successful during the programme. Some men found the information interesting and meaningful due to the fact it was personalised to them as individuals and provided further insight on their own unique behavioural patterns. Several men explicitly said they were motivated by the information in their feedback letter, particularly those who perceived themselves as having successfully achieved their weight loss targets. The information in the feedback letter was a means through which they could visually reflect on their own achievements, which, in turn, motivated them to continue their healthier lifestyles. The post-programme feedback could be interpreted as providing important support for the men’s needs of autonomy and competence which according to SDT are integral for optimal motivation.

However, other men spoke about how the information on their activity patterns could be interpreted on different levels. For these men, the objective feedback on their activity patterns provided a means of planning precisely where, at which parts of the day, further increases in activity levels could be incorporated. They discussed the feedback in greater depth and emphasised ways in which they could make greater use of the information as a self-regulatory tool for incorporating further behavioural changes. These findings are consistent with what SDT defines as being autonomy supportive. Internalisation and self-determined motivation occurs in autonomy supportive environments or contexts where at least two of the following three facilitating factors are present: providing a meaningful rationale;

acknowledging feelings; and supporting opportunities for choice and minimising control (Deci et al., 1994). The information in the feedback letter was perceived by the men as being interesting and enjoyable to interpret and was relevant to them providing an important rationale for them to utilise the information further. Furthermore, the visual representations of their activity patterns provided the men with greater options and opportunities to choose when they could alter their activity levels. However, it is also important to note that the men who spoke about using the feedback as a behaviour change tool were able to confidently interpret the information. This point is crucial and could be viewed as further satisfying their perceived need for competence thus enhancing their willingness to actively utilise the feedback as a resource for behaviour change.

The feedback letter also functioned as a powerful reminder of the men's achievements and functioned as a durable piece of evidence that could be referenced again at any time as a motivational prompt, providing proof of their capacity to change. These findings are also consonant with SDT as the feedback letter functioned as an enduring source of competence support which these men could draw upon again in future as a resource to bolster their confidence in themselves and their ability to alter their behaviours by themselves.

A few men expressed that they felt motivated to maintain their lifestyle changes they had implemented in response to the feedback letter due to the fact that it highlighted the efforts and resources (e.g. from the football club, the coaching staff and the researchers) devoted to helping them adopt healthier lifestyles during the programme. These men's accounts (e.g. "I don't like letting people down") were again indicative of what SDT defines as introjected regulation. However, these men also spoke about making strong internal commitments to themselves suggesting that more autonomous reasons were also driving their sustained behavioural change. SDT posits that motivation can vary along a continuum and people can therefore have both controlling and autonomous regulations for engaging in the same behaviours. Receiving the feedback letter post-programme motivated some men to maintain their efforts in order to avoid letting others down who were involved in helping them adopt healthier lifestyles during the programme. The feedback letter also reinforced the men's initial

motivations for changing their behaviours during the early stages of the programme. Consistent with SDT, these findings suggest that controlling forms of motivation were still important even after more autonomous forms of motivation had become more dominant after the 12-week programme had ended.

Some of the men said receiving ongoing correspondence as part of their participation in the programme was an influential source of encouragement and inspiration to sustain their healthier lifestyles once the 12-week programme had come to an end. Receiving the post-programme feedback letter was important to the men as they continued to feel consciously acknowledged and valued as unique individuals. Congruent with SDT, the feedback letter could be interpreted as being supportive of the men's ongoing need for relatedness. Relatedness is the need to feel connected and understood by others and combined with the needs of autonomy and competence, is proposed to be crucial for facilitating the internalisation of extrinsic motivation. SDT also posits that health-related settings that facilitate people's experience of these three needs are crucial for behavioural adoption and maintenance (Ryan et al., 2008). Receiving the post-programme feedback letter could have supported some men's feelings of relatedness post-programme and thus was important for encouraging their desire to maintain changes in their behaviour long-term.

However, men who did not achieve their 5% weight loss goals post-programme were not as enthusiastic about the usefulness of the post-programme feedback compared to men who had achieved their weight loss targets. The feedback letter confirmed their lack of success during the programme and reaffirmed wider constraints in their lives that prohibited them from making more rigorous changes to their lifestyles. These men were therefore not motivated to utilise the information in the same way as those who perceived themselves as being successful during the programme. For others the information was described as too complex to understand and was not viewed as an effective motivational or behaviour change tool. Receiving the feedback resulted in a negative impact as it undermined their feelings of confidence or efficacy in relation to being able to fully comprehend the feedback. The feedback was therefore not supportive of these men's feelings of autonomy or competence, which, in turn, resulted in

minimal impact on their motivation to make greater use of the feedback or incorporate further changes to their lifestyles after the 12-week programme had ended. Overall, the post-programme feedback letter was perceived as being more useful and meaningful to men who could confidently interpret the information and perceived themselves as being successful during the 12-week programme.

The findings reported in chapter six, build on previous qualitative work which has examined the ways in which people understand and utilise innovative forms of objective PA feedback (Western et al., 2015). Western et al (2015) conducted a recent qualitative study to explore the ways in which patients at moderate to high risk of chronic disease responded to objective personalised visual feedback on their PA levels. They reported that patients were able to interpret the information on their activity patterns which enhanced their knowledge about their own PA levels. Some felt surprised at the feedback and reported discrepancies between their initial expectations and the objective feedback. The feedback was presented using different colours which was described as motivating. Receiving multidimensional PA feedback motivated the participants to increase their activity levels. They felt able to confidently utilise the PA feedback to help them increase their activity levels using self-regulatory strategies such as self-monitoring, without additional support. These findings resonate closely with my findings discussed above. However, the authors concluded that the interviewees did not find the PA feedback utilised in this study to be complex and/or confusing. These findings are in contrast with the accounts of some men in the current study who found the information on their objective activity patterns in the post-programme feedback letter too complex to interpret.

The findings presented above provide a useful insight into the ways in which men respond to innovative and personalised feedback on their activity patterns within the context of a gender-sensitised weight management programme. The evidence for incorporating self-regulatory behaviour change techniques within PA and weight management interventions is growing (e.g. Michie et al., 2009, Dombrowski et al., 2012). The advent of increasingly sophisticated Web 2.0 technologies capable of providing detailed feedback on a myriad of health-related metrics via electronic and mobile health (termed 'E-health' or 'M-health') devices

incorporated within the context of behaviour change interventions are likely to increase over the next few years (Lupton, 2012). Web 2.0 technologies differ from Web 1.0 technologies in respect to the fact that they enable the capacity to personalise health information and messages on an individual level as well as the ability to track and monitor various aspects of behaviour (Lupton, 2012). The term ‘self-tracking’ is now frequently used to refer to these technologies. There is an emerging movement referred to as ‘the quantified self’ that is part of managing, improving and optimising aspects of one’s life through greater knowledge of the self via extensive self-monitoring or self-tracking behaviours (Lupton, 2013).

These technologies provide increasingly more detailed means of reporting back comprehensive data to participants during participation in weight loss interventions as a means of supporting participants’ self-knowledge and autonomy. In this thesis I have mainly discussed these findings in relation to motivational understandings of feedback and individual behaviour change. However, it is important to be cognisant of more critical approaches in relation to the wider sociological ramifications of objective monitoring and personalised technological feedback in relation to health and health behaviour. Alternative perspectives have critiqued existing psychological theories of health promotion and behaviour change as being too individually focused and void of the socio-political context in which people exist (Lupton, 2012). Furthermore, it has been argued that such approaches reduce health problems to the micro-level and encourage people to actively utilise technologies as means of taking individual responsibility for their own health behaviours thus conforming to dominant neo-liberal ideals (Lupton, 2012). Lupton argues these approaches have focused predominantly on the positive facets of digital health technologies and have avoided the potential negative consequences. For example, feelings of anxiety or stress that might arise when individuals are unable to competently master or utilise such digitised forms of health and behaviour change. The findings in this chapter resonate with these arguments. Men who viewed themselves as being successful during the programme and could proficiently interpret the feedback were able to fully benefit from the information as a tool for self-enhancement. Receiving the information increased their self-knowledge and confirmed their progression or transformation towards

apotheosis or a healthier more optimally functioning body/self. However, some men found the information too complex or even disempowering, particularly those unable to sufficiently alter their lifestyles during the programme. Lupton (2012) suggests that it is often assumed all individuals have equal access to objective technologies. However, several extraneous factors, such as economic circumstances, existing knowledge of computer technologies or levels of health literacy may further limit access or utilisation of digital health technologies. This assertion is consistent with the accounts of men in this chapter who were unable to confidently interpret the feedback in comparison with men more accustomed to working with technology and computerised self-tracking devices. Therefore, further support and tailoring of feedback might be important when providing complex PA data to individuals that take consideration of people's individual abilities to ensure optimal understanding and utility of the information. Further sensitivity and advice may also be required with regards to providing objective feedback to those unable to sufficiently alter their behaviours during weight management interventions.

7.2.4 Are there differences in the accounts of men who achieved and did not achieve their 5% weight loss target during the 12-week programme?

In order to address my fourth research question, I conducted detailed analysis in order to ascertain if there were any overall differences between the accounts of men who achieved and did not achieve at least 5% reduction in their body weight during the 12-week programme. During my analysis, I found differences in the accounts of men who achieved greater levels of weight loss and reported these briefly in each of the findings chapters above.

Overall men who achieved greater weight loss during the 12-week programme were more likely to describe being motivated as a consequence of receiving information on their objective indicators of health risk at the baseline measurement session. For these men the information reinforced their initial reasons for enrolling on the programme or for some were a powerful motivator to embrace behavioural changes in their own right. Men who lost at least 5% of their

body weight tended to be more likely to explicitly cite health concerns and ‘being there’ for family as the most important reasons for taking part in the programme. These men were also more likely to attribute their health risk status as being a consequence of their actions and used language such as ‘self-inflicted’ to indicate accountability to themselves. They were also more likely to use emotive language to describe how the feedback on their health risk parameters made them feel. For example, some said they were ‘shocked’, whereas others said they felt ‘angry’ or ‘disgusted’ at themselves and were more likely to appraise the information more negatively overall.

As discussed in chapter five, I found that men who achieved their weight loss target of 5% body weight spoke more explicitly about the various benefits experienced as a consequence of being more active and losing weight. They also reported being able to take part in further activities which they had since integrated as part of their lifestyles and feeling better within themselves. Men who achieved their weight loss targets were also more likely to discuss continuing to self-monitor their activity levels either with the pedometer or other objective technological devices, which, in turn, motivated them to continue their active lifestyles after the 12-week programme as it was something they enjoyed. However, men who did not achieve their 5% weight loss target during the 12-week programme were more likely to discuss negative experiences with using the pedometer during the programme. For example, some struggled to achieve their step targets throughout the 12-week programme. These findings suggest that for some men the lack of feelings of satisfaction and self-achievement associated with achieving their PA targets resulted in negative feelings towards aspects of the programme. Consequently, they were more likely to reject the tools offered to them during the programme. These men also discussed experiencing greater difficulties with regards to motivation to maintain their activity levels after the programme. They were more likely to condemn the pedometers utility and attributed their lack of success to problems they had encountered which they had minimal control over. Moreover, these men were more likely to have emphasised the importance of peer support in sustaining their motivation during the 12-week programme.

The findings in chapter six provide insight into the ways in which the men responded to feedback on their activity levels after taking part in the 12-week programme. As I discussed above, men who found the information to be most useful as either a self-regulatory or behaviour change tool were men who experienced changes for themselves and were able to adeptly interpret the information. These men were more likely to perceive the information as confirmation of their success thus enhancing their feelings of achievement, particularly among men who achieved their weight loss targets (i.e. 5% weight loss). They were more likely to view the information as being a tangible record of their achievements which they could refer back to in future as a motivational prompt as consolidated what they could achieve by their efforts. However, men who did not achieve their 5% weight loss goals post-programme were less positive about the post-programme feedback letter. These men reported greater feelings of trepidation prior to receiving the letter and were less optimistic about the changes they had been able to make during the programme. They were more likely to perceive the feedback as being disappointing and were less enthusiastic about the usefulness of the post-programme feedback as a resource for motivation or behaviour change. For some of these men the information consolidated external barriers prohibiting them from incorporating greater changes to their lifestyles and highlighted wider constraints perceived as insurmountable. The objective feedback confirmed their lack of success during the programme and therefore had less impact or utility as a motivational prompt.

7.3 Strengths and limitations of the current study

One of the strengths of this study is it was embedded within a broader and rigorous research context, complementing a RCT and process evaluation of FFIT, a gender-sensitised weight management programme delivered to men via professional football clubs successful in helping men achieve clinically significant weight loss up to 12-months following baseline assessment. This study allowed me to gain access to men taking part in a weight loss programme who were not taking part in other routine services and were at high risk of future disease. Therefore, the findings of this research provide insights from a population of overweight and obese men that need to be better understood if the obesity epidemic is to be effectively tackled.

The study was able to draw upon qualitative methods to examine men's experiences and reactions to receiving different forms of objective feedback and compare the accounts of those who were and were not successful in achieving objective weight loss targets. The study also incorporated the use of accurate and innovative feedback on PA and sedentary behaviour from the activPAL3™ monitor which was a novel feature of this research enabling me to explore the ways in which men responded and utilised the information. The study used an inductive lens to analyse SDT and motivational processes alongside wider sociological understandings of masculinities and health providing a unique and original perspective.

However, there are a number of important limitations of this study that are important to address. The men who agreed to take part in this research study were sampled from four different football clubs and had complied with wearing the activPAL3™ monitor at both the beginning and end of the 12-week programme. Moreover, the 28 men interviewed for this study were all sampled from the 37 men who complied with wearing the device both times and received the detailed feedback letter post-programme. However, it is possible that these men were more willing to take part and may have been more positive or optimistic about certain components of the programme despite the sample including both men who were and were not successful in achieving their 5% weight loss target. Out of the 63 men who wore the activPAL3™ at baseline, many dropped out of the programme or refused to comply with wearing the device again at 12-week follow-up. It is possible that these men were less able to achieve their weight and/or PA goals and perhaps felt they had been unsuccessful and thus would have been reflected objectively in their results. It is therefore important to understand the perspectives and experiences of men who dropped out of the programme and who also did comply with wearing the activPAL3™ monitor.

Higher rates of attrition were observed during the non-trial deliveries of the programme which in part may reflect increased strain or burden on some of the club resources to deliver the programme without the same levels of formalised support given by the trained university research staff. Furthermore, it is important to note that I may have been viewed by the men as being affiliated with

the programme in my position as a PhD research student. I had previous contact with the men at each of the four clubs during the measurement sessions and was directly involved in fitting the men with the activPAL3™ monitors and recovering them on each occasion. Whilst I believe that having good rapport with the men was essential in gaining rich insight into their experiences and generating substantive data during the interview process, it is possible, however, that some men may have felt prohibited from providing more negative opinions or thoughts about the programme in general despite being encouraged to express their opinions freely at all times. Moreover, out of all of the 28 men sampled for this research none of the men included were from ethnic minority groups. This is consistent with the demographic of men taking part in the wider FFIT RCT and indicative to some degree of the lesser amount of ethnic diversity in several regions of Scotland in comparison with other parts of the UK (Wyke et al., 2015). Further research specifically with men from diverse ethnic backgrounds would be valuable in this context and is something that should be addressed in other research projects. Finally, despite my attempts to conduct the interviews within a brief time period following the men's receipt of the post-programme feedback letter, in some cases several months had passed since the men had completed the programme and had been given the feedback letter. Therefore, some men were perhaps able to recall greater aspects of the objective feedback letter than others during the interview process.

7.4 Future research

Future research would be useful to investigate the ways in which objective feedback on men's health risk status can be used as a motivational behaviour change prompt within the context of other weight management and behaviour change programmes. Longitudinal research conducted along different time points as well as incorporating longer term follow-up would be useful in future to investigate findings in relation to maintenance of weight loss (longer than 12-months post-baseline). Research utilising quantitative measurements in larger samples, alongside further qualitative work to investigate feedback, tenets of SDT and factors associated with maintaining behaviour change would be valuable. The

data collected in this study also provides me with an opportunity to compare changes in self-reported and objectively measured PA and sedentary behaviour.

This study focused on the men's experiences of feedback and their use of self-regulation strategies to increase their activity levels during and after FFIT. However, wider social support is important for behaviour change (e.g. Greaves et al., 2011), especially in relation to sustaining PA behaviours shown to be crucial for weight loss maintenance (e.g. Wing and Phelan, 2005). Previous research has reported on the ways in which family relations are (re)negotiated when men attempt to lose weight (MacLean et al., 2014). Investigation of the influence of family members on the men's use of feedback and ability to incorporate behaviour changes was beyond the scope of this current study. Future research exploring the influence of family members on men's attempts to integrate behaviour change strategies to help initiate and maintain changes in their PA levels and other weight-related behaviours would be useful.

The current study focused particularly on the role of PA, feedback and behaviour change in relation to weight management. However, dietary behaviours and energy intake are crucial for weight loss initiation and maintenance. Further work investigating how motivational process underlying PA behaviour overlap or differ in relation to dietary behaviour is important. It is suggested that transference or motivational 'spill over' effects in motivation can occur from one behavioural domain to another (Teixeira et al., 2012b). It is important to add that FFIT may not attract men not interested specifically in football and other approaches are required to appeal to other groups of men (Wyke et al., 2015). Further research conducted with men to examine their responses to objective feedback on PA and other health risk indicators within other health-related contexts and settings that are not gender-sensitised would be beneficial.

7.5 Implications for practice and future intervention development

The findings of this study emphasise some of the challenges faced by overweight and obese men with regards to engaging with weight loss initiatives and may help to partially explain why some men avoid many existing weight management

programmes and interventions (Robertson et al., 2014). Acknowledging one's vulnerability and susceptibility to obesity-related disease and actively deciding to seek professional advice or services for weight management could be viewed by some men as being divergent from prominent cultural notions of masculinities. Alongside research suggesting that men are more likely to eschew current biomedical definitions of overweight or obesity (e.g. Gray et al., 2011), the present findings suggest that some men may choose to avoid weight management programmes due to low self-esteem and negative self-image. For others, concern or fear about being given information on their weight status and facing the reality of increased health risk may prohibit them from enrolling in weight loss initiatives, particularly among those unfamiliar with such measurements.

The findings suggest it is important to acknowledge the emotional and psychological impact of providing information relating to men's body weight/size and health, which could hinder their motivation and willingness to adopt health behaviours critical for weight management without sufficient support and/or advice. They also suggest that it is likely to be important, when inviting men to be measured, to address their initial concerns or fears about receiving information on their health risk indicators, particularly for those men whom have limited experience of having these kinds of measurements. Alleviating and reducing concerns prior to attending baseline measurement assessments may encourage more men to attend weight management opportunities and provide them with vital information about their health risk.

The findings outlined have implications for the importance of ensuring that supportive contexts are promoted within the context of weight management interventions, particularly where personal and sensitive information is communicated (e.g. body weight, BMI and other health risk indicators). Such information could negatively impact on motivation and wellbeing without sufficient support for basic needs of competence, relatedness and autonomy. Therefore, accordant with SDT it is important that sensitive information on health or disease risk be made available or communicated to overweight/obese people in settings which are supportive of people's needs.

During the baseline measurement sessions formalised and explicit personalised feedback was provided for specific measurements. The men were told their BMI and shown their individual readings on a chart visualising their BMI classification. Blood pressure letters were issued to men whose readings were high during the measurement session to give to their doctor with their recordings clearly visible. However, less formalised feedback was given in relation to other health risk indicators such as waist circumference that frequently arose as being important during the interviews. The findings of this study suggest that it might be important to provide feedback and metrics beyond weight and BMI for men including other indicators of body composition that are also important for health outcomes. However, it is important to ensure that meanings and personal relevance of health-related feedback is communicated clearly and advice given on how to manage disease risk factors.

The findings of this study demonstrate the potential of professional sports clubs and other settings as spaces where health risk assessments and other regular health checks could be delivered. These places may appeal to high risk men who avoid other opportunities for similar assessments in places that are inconsistent with their identities. Settings and environments such as professional football clubs are nonthreatening and bolster men's 'masculine capital' by providing access to valued and privileged spaces (Hunt et al., 2013, Hunt et al., 2014a). Therefore, situating health assessments within these domains combined with providing personalised objective feedback and advice could provide an effective means of engaging men to actively take greater control of their own health and health behaviours.

The findings of this study highlight the importance of pedometers as effective motivational tools for increasing men's activity levels and extend previous research demonstrating that walking is a highly acceptable form of PA endorsed by men (Hunt et al., 2013). Consistent with theoretical understandings of behaviour change the pedometer feedback provided an accessible means of assessing men's progress and attainment of PA targets, which, in turn, increased feelings of competence and autonomy, crucial for successful behaviour change. However, the findings of this research also reveal the pedometer was not universally endorsed by

all of the men and some perceived it as negative. These men described particular constraints in their lives and external factors (e.g. sedentary jobs and time constraints) that were viewed as prohibitive to attainment of their PA targets. The pedometer feedback reinforced their lack of control and inability to increase their activity levels. These findings suggest that greater focus is required to identify men at early stages of the FFIT programme and provide them with greater options and choices in relation to strategies to help them effectively increase their activity levels and provide them with additional support in making behavioural changes (e.g. further tailoring of step goals and/or implementing shorter higher intensity bouts of PA for those who are capable). The development of more sophisticated 'M-health' technologies (e.g. mobile applications) and online tools might be of utility in providing further necessary support to men both during and after taking part in the programme.

The findings illustrate that men who were more successful in losing weight during the 12-week programme were more enthusiastic about the various forms of feedback offered during the programme. They appeared to have been initially motivated to adopt healthier lifestyles mainly by a desire to avoid ill-health and 'be there' for family. Men who were successful in achieving their weight loss targets were also more likely to demonstrate autonomous motives for continuing their healthier lifestyles (e.g. valuing behavioural outcomes and/or performing behaviours that were described as being enjoyable). The findings of this study appear to illustrate the importance of more autonomous reasons for both adopting and maintaining healthier lifestyles and PA/exercise-related behaviour, consistent with previous work (Teixeira et al., 2012a). These findings suggest it is therefore important to emphasis and instil more autonomous motives earlier on in the programme. For example, encouraging men to focus less on controlling or extrinsic motives (e.g. appearance focused) and more on encouraging valued outcomes associated with adopting healthier and more active lifestyles (e.g. time with family, ability to experience enjoyable activities and improved health and vitality). Men enrolled on the FFIT programme are motivated enough to want to adopt healthier lifestyles. Identification of men motivated predominantly by controlling factors as well as those experiencing significant competing demands in

their lives is important particularly at the early stages of the programme. This will ensure particular resources are allocated to helping these men navigate behaviour change by ensuring further support is provided for their basic needs thus helping internalise their motivation and ability to successfully implement behaviour change strategies (e.g. self-monitoring of behaviour).

These findings also emphasise the value of providing personalised objective feedback that highlights successful changes achieved during PA and/or weight management programmes. Receiving personalised objective feedback was reported to be an important means of supporting factors integral to sustaining long-term behaviour change. However, caution should be taken when providing information that reinforces one's lack of progress or a person's inability to make successful changes in the absence of further support or advice on how to effectively overcome challenges and make successful changes. These findings also denote that complex objective feedback may not be universally understood or perceived as useful by everyone. Therefore, it is essential that all comprehensive objective feedback provided as part of interventions are delivered and designed in ways that are easily understandable and interpretable. This will ensure equal access to information which may have the potential to be used as tools for supporting further behaviour change.

7.6 Conclusion

This study provides a unique contribution to the literature by investigating men's experiences and understandings of objective feedback within the context of a gender-sensitised weight management programme. These findings could be interpreted in different ways. However, by analysing the data through the lens of SDT (Deci and Ryan, 2000), an empirically supported holistic theory of motivation and behaviour change while also drawing on wider sociological understandings of masculinities and health, enabled me to investigate whether tenets of this framework were indeed applicable to the ways in which men used different forms of feedback as behavioural change tools within the FFIT programme. The findings also provide insight into how objective feedback and self-monitoring technologies

can be important for developing autonomous forms of motivation and sustaining behaviour change longer term.

The findings of this study demonstrate the ways in which pedometers can operate as motivational tools by satisfying important psychological needs. However, they also revealed that aspects of the setting (i.e. the professional football club) and the people within it (i.e. other men 'like them' and the club coaches) were integral in facilitating optimal forms of motivation to adopt important strategies and techniques important for behaviour change (e.g. self-monitoring and goal setting). These factors enabled some men to internalise their motivation and sustain changes to their lifestyles after the 12-week programme had ended.

The findings of this study also demonstrate the potential of using advanced technology to provide highly detailed and personalised feedback to men within the context of behaviour change interventions and other settings. Objective PA feedback that is specifically personalised was reported to have greater intrinsic value and relevance compared to more general feedback on activity or PA guidelines. However, these findings indicate that it is important to present feedback in a format that is easily understandable and that does not undermine people's feelings of competence either by providing information that is too complex and/or reinforces lack of success in altering behaviour. The findings of this study illustrate the value of self-monitoring technologies for increasing activity levels and enhancing autonomous forms of motivation. Self-monitoring is important as it enables people to gauge their activity levels and achieve their own self-determined PA targets. Therefore, in future it will be important to understand the potential of innovative technologies that are able to provide detailed visualisations of people's unique behavioural patterns, empowering them with the capacity to self-monitor and track various aspects of their PA and sedentary behaviour.

Overall, the findings of this study illustrate some of the challenges faced by men about attending novel and existing weight loss services. These findings demonstrate the potential of undertaking objective measurements and providing sensitive, personalised feedback *within a context that reinforces, rather than*

undermines, their identities. Providing different forms of objective feedback and behaviour change strategies to men within an environment that has intrinsic value (e.g. football club setting) and congruent with common cultural constructions of masculinity, appears more conducive to health behaviour change. These findings confirm and extend other research on FFIT (Hunt et al., 2013, Hunt et al., 2014a) and demonstrate ways in which FFIT enabled men to lose weight and adopt health behaviours in a context that reinforced their ‘masculine capital’ (de Visser et al., 2009).

Appendix 1 - Participant letter



«Name»

«Address1»

«Address2»

«Address3»

«Postcode»

Friday, 30 September 2016

Dear «Dear»

SPL Football Fans in Training (FFIT): Objectively measuring physical activity and sedentary time

Insert club logo here

We hope that you are looking forward to starting on the FFIT course at [club] on [day, month, year]. Your club is collaborating with the FFIT research team to offer men the opportunity to take part in some additional research which gives you and the research team a complete picture of your physical activity over a week, and how it changes over the course of the programme. It involves wearing a small device about the size of 2-3 squares of chocolate. When you come along on the first night of the FFIT programme you will be asked if you would like to do this. There is absolutely no obligation to do it if you do not want to.

The small device is called an ActivPAL. If you do want to take part in the additional research you would wear it for one week at the start of the programme and then again for one week near the end of the programme. The ActivPAL records your movements throughout the day. It lets us see what types of activity you perform on a daily basis and can also be used to show you exactly how much time you spend; standing, stepping, sitting or lying down over a period of seven days. We will give you a summary of your weekly activity over the seven day period if you would like this.

The ActivPAL is worn on your right thigh, between the knee and the hip. It is attached with medical adhesive tape and is easy to remove. To ensure the device is waterproof it is covered with a small rubber cover so that it can be worn in the shower. The device only needs to be removed if you decide to have a bath or go swimming during that week. We do not expect that wearing the ActivPAL will result in any skin irritation, although if you experience any problems such as itchy, sore skin, you would be advised to remove the device.

If you do want to wear the ActivPAL monitor you will be provided with a full session on how to apply the device by the researcher. **Participation is entirely optional and if you do not wish to wear an ActivPAL device you can still participate in all other aspects of the FFIT programme.** You can let us know when you come to your first FFIT session if this is something that you would like to do or not. If you do agree to wear the device, you also have the right to remove it at any point and still participate in the FFIT programme.

All information that we collect from the ActivPAL monitor will be kept in the strictest of confidence and will only be available to the researchers involved in this study. It will be stored within the premises of the MRC Social and Public Health Sciences Unit in line with the MRC policies.

All of the information will be anonymised so that you are not identifiable in any future publications or summaries arising from this study. If you would be interested in a summary of the findings, we can arrange for these to be sent to you.

If you would like any further information regarding this research prior to making a decision, please contact the researcher Craig Donnachie or the supervisors of the project; Professors Kate Hunt, Sally Wyke or Nanette Mutrie who will aim to answer any questions you may have (contact details provided below).

Thank you again for all of your help.



Craig Donnachie
PhD Student
MRC | CSO Social and Public Health Sciences Unit
4 Lilybank Gardens, G12 8RZ

If you require any further information, please contact:

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Appendix 2 - Participant information sheet



Participant Information Sheet

SPL Football Fans in Training (FFIT): measuring physical activity and functioning

What the research is about

Many thanks for agreeing to consider taking part in this study looking at how Scottish Football clubs can help men become fitter, live better and lose some weight. As part of your participation in the FFIT programme your club has been selected to take part in an additional assessment of objective physical activity, at the start and end of the FFIT 12 week programme. Your participation will enable us to gain a more accurate assessment of FFIT participants' activity levels over the course of the 12 week programme. You will be asked if you are willing to wear a small device called an ActivPAL for one week at the start of the programme and for one week towards the end of the 12 week programme. This information will help us to evaluate the long-term sustainability of weight loss and the future delivery of the FFIT programme.

What is involved?

You will be asked questions about how many activities you do as well as how confident you are in performing various activities. Your weight, height, waist, blood pressure, and respiratory function will be measured. You will also be asked to wear a small device called an ActivPAL for a period of seven days. The ActivPAL is a monitoring device worn on the thigh, between the knee and the hip, which records your movements throughout the day. This is a very useful piece of equipment as it informs us on what kinds of activity you perform during the day and can be used to provide you with feedback on your current physical activity levels. The ActivPAL is able to measure your physical activity levels, as well as how much time you spend sitting, standing or lying down, over a period of seven days.

Is participation compulsory?

No. Participation is optional and if you do agree to take part, you also have the right to withdraw participation at any time and still take part in the FFIT programme. If you require any further information about this research before making a decision about taking part or not, feel free to contact the researcher Craig Donnachie, or the supervisors of the project, Professors Kate Hunt, Nanette Mutrie or Sally Wyke who will aim to answer any questions you have. **(Contact details can be found on next page).**

What happens if I agree to participate?

If you decide you would like to take part, you will be fully briefed on how to wear the ActivPAL monitoring device. When you come along to take part in the first week of your programme the research team will provide you with information about the equipment, outlining exactly what it does as well as instructions on how to securely wear the device.

Once you have been fully briefed you will be asked to wear the monitor for a period of seven days. After this period the monitor will be collected from you when you attend your next FFIT session so that the data can be extracted for analysis purposes. On the eleventh week of the programme you will be asked whether you are willing to wear the monitor for a further seven days so we can compare your activity levels at the start and end of the 12 week programme. We will ask you about your experience of wearing the ActivPAL when you return it; if you agree, we may record what you say about wearing the ActivPAL so that we can get an accurate record of men's views.

What are the benefits of taking part?

Your participation in this study will provide us with further information on levels of physical activity performed during the delivery of the FFIT programme. A significant focus of FFIT is on increasing walking activity which has been associated with clinically significant weight loss. Your participation will provide data which will contribute to our overall evaluation of FFIT. You will also be asked if you would like to receive a letter containing a summary of your physical activity levels at the beginning and end of the 12 week programme. The information included on the print out will tell you exactly how active you were throughout each of the days that you wore the monitor.

Are there any risks involved in taking part?

It is very unlikely that you will come to any harm as a result of taking part in the study. However, should you have any concerns either now or at any point during the study, please contact Dr Valentina Bold, College of Social Sciences Ethics Officer: Valentina.bold@glasgow.ac.uk

What will happen to the information given?

All information that we collect from you and individual readings from the ActivPAL will be kept in the strictest of confidence and will only be available to the researchers involved in this study. It will be stored within the premises of the MRC Social and Public Health Sciences Unit for up to 10 years, in line with the MRC policies.

All of the information will be anonymised so that you are not identifiable in any future publications or summaries arising from this study. If you would be interested in a summary of the findings, we can arrange for these to be sent to you.

If you require any further information, please contact:

Craig Donnachie, PhD Student / Professor Kate Hunt

MRC Social & Public Health Sciences Unit

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Appendix 3 - Consent form



PARTICIPANT CONSENT TO OBJECTIVE MEASURES OF PHYSICAL ACTIVITY AND FUNCTIONING

Please read these statements, tick a box on each line and sign at the bottom
(PLEASE KEEP THIS COPY FOR YOUR RECORDS)

	Yes	No
I confirm that I have read and understood the information sheet provided for the proposed study.		
I confirm that I have been able to ask questions about this study and have had these answered to my satisfaction.		
I understand that it is my choice to take part in this part of the FFIT research. I have the right to withdraw at any time without giving a reason and this will <u>not affect</u> future participation in the Football Fans in Training programme.		
I understand that I do NOT have to answer any question if I wish not to and that all answers will be kept in the strictest of confidence.		
I consent to being interviewed about my experience of the FFIT programme and the research on physical activity using the ActivPAL device and I understand that the interview will be audio-recorded and transcribed.		
I consent to any information I provide to be used for reports, publications and/or presentations and understand that my identity will be kept <u>completely anonymous</u> .		
I understand that my data will be kept in the strictest of confidence and will be destroyed in line with current MRC policy.		
I would like to receive feedback about my physical activity levels as measured by the ActivPAL device.		
I would like to be informed about the overall results of this research.		
I am happy to be contacted in future in connection with any matter relating to FFIT.		
I agree to take part in the above study.		

↑ NAME (PLEASE PRINT)

↑ Researcher Name

DATE

↑ SIGNATURE

|
↑ Researcher SIGNATURE

DATE

Appendix 4 - Objectively measured physical activity feedback letter



SPL Football Fans in Training (FFIT): Physical Activity Monitoring Feedback Letter

Thursday, 17 May 2012

Dear...

We are really pleased you took part in the FFIT programme. We hope that the programme has helped you to feel better in your day to day life and to achieve the goals that you set for yourself.

Thank you very much indeed for helping with our research to measure objectively your physical activity.

In this letter we are sending you some personal feedback on what the ActivPAL showed about your physical activity levels. The information from the ActivPAL is able to show you precisely how active you were throughout each of the days that you wore it.

The first table on the next page shows the information the ActivPAL measured before you started the programme and after it. It shows that on average you:

- increased your steps by 3952 steps per day;
- decreased the amount of time you spent sitting or lying down by 53 minutes;
- increased the time you spent stepping by 36 minutes;
- increased time spent standing by 12 minutes; and
- increased your energy expenditure by 1.6 METs.

Well done!

The graphs on the next page show all of this information in a different way. The amount of time you spent sitting or lying is shown in yellow below the axis and time spent standing (green) or stepping (red) is shown above the axis.

Table 1. Objective physical activity measures before and after participation in the FFIT Programme.

Activity Levels (Daily Average)	Before Participation in the Programme	After Participation in the Programme	Difference Achieved
Number of steps	9398	13350	3952
Sitting/lying time (hours/minutes)	14hrs 36mins	13hrs 42mins	53 mins
Stepping time (hours/minutes)	2hrs 12mins	2hrs 48mins	36 mins
Standing time (hours/minutes)	7hrs 18mins	7hrs 36mins	12 mins
Energy Expenditure (Metabolic Equivalent; MET: hours per week)	34.8 (MET.h)	36.4 (MET.h)	1.6h (MET.h)
Number of sit to stand transitions per day	42.2 transitions	40.7 transitions	n/a

As I'm sure you'll know after doing the FFIT programme, current UK recommendations suggest that: 3,000 to 6,000 steps each day are considered sedentary; 7,000 to 10,000 steps moderately active; and 11,000 steps or more very active

The second table shows the difference in your body weight and waist circumference before and after the programme.

- You lost 2.3 kg in weight and
- You lost 2.42 cm from your waist.

Well done!

Table 2. Physical measures before and after participation in the FFIT Programme.

Physical Measures	Before Participation in the Programme	After Participation in the Programme	Difference Achieved
Body Weight	122.1 kg (19.2 stones)	119.8 kg (18.9 stones)	2.3 kg (0.4 stones)
Waist Circumference	125.57 cm (49.44 inches)	123.15 cm (48.48 inches)	2.42 cm (0.96 inches)

If you would like to talk over any of this feedback, or would like to know anything else about the information included in this letter, please don't hesitate to contact me:

Telephone: 0141 357 7566

E-mail: c.donnachie@sphsu.mrc.ac.uk

You can contact me on my mobile number (07909 874 640) any time out of working hours or phone my office number (0141 357 7566). If I am unavailable when you call, please leave a message for me so that I can call you back at a time that suits you.

Thank you again for all of your help.

A handwritten signature in black ink, appearing to read 'Craig Donnachie', written in a cursive style.

Craig Donnachie

PhD Student

MRC | CSO Social and Public Health Sciences Unit
4 Lilybank Gardens, G12 8RZ

Appendix - 5 Example of activPAL feedback (beginning of programme)



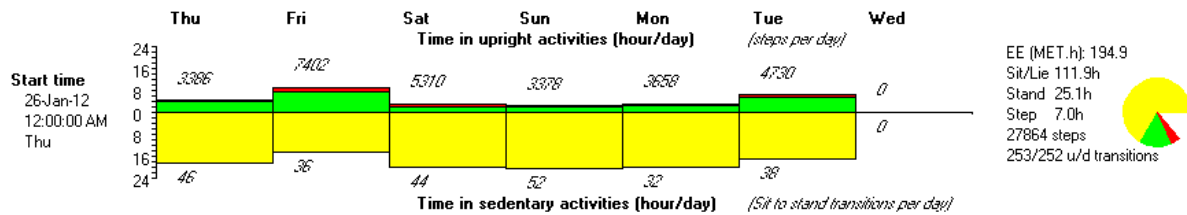
Activity summary for 16035F-AP1132605 25Jan12 12:00am for 6d 0m

From: 12:00:00 AM 26-Jan-12 to 12:00:11 AM 01-Feb-12

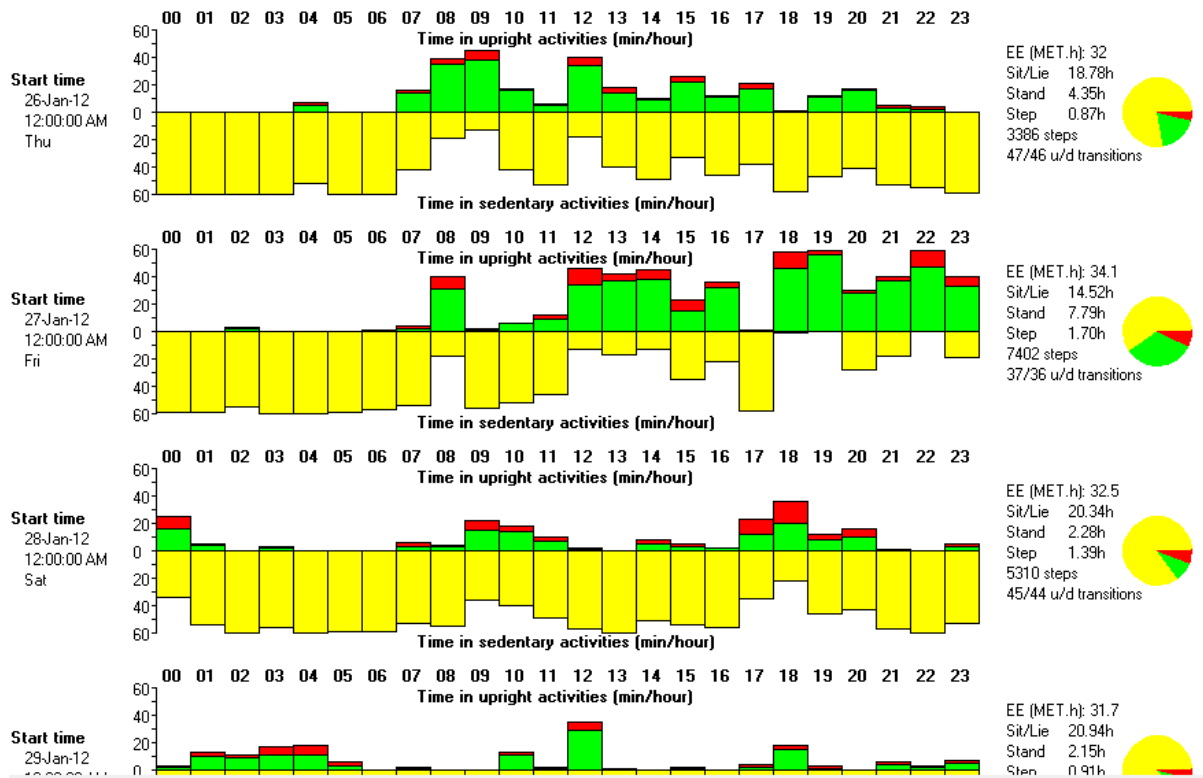
Monitor serial number: AP1132605

Elapsed Time: 6day(s) 00h 00m 11s

Summary by week:



Summary by day:



Appendix - 6 Example of activPAL feedback (end of programme)



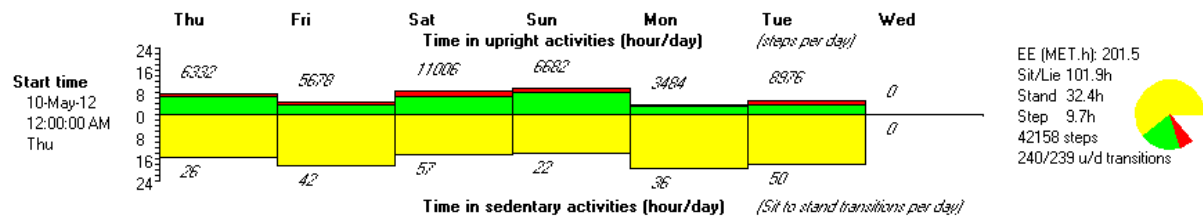
Activity summary for 16035F-AP1132622 09May12 12-00am for 6d 0m

From: 12:00:00 AM 10-May-12 to 12:00:12 AM 16-May-12

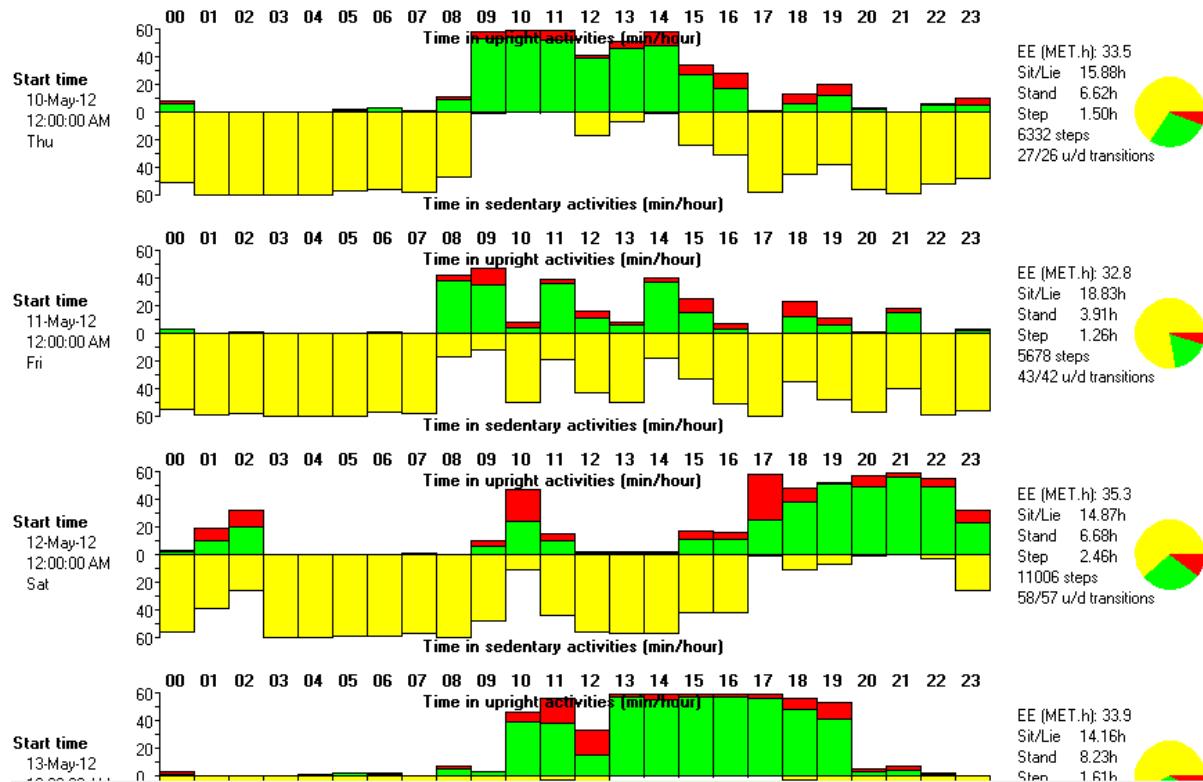
Monitor serial number: AP1132622

Elapsed Time: 6day(s) 00h 00m 12s

Summary by week:



Summary by day:



Appendix 7 - Topic guide: experience of feedback



SPL Football Fans in Training (FFIT): Interview Topic Guide: Experience of Feedback

Introduction

Firstly, I would like to say thank you for taking the time to speak to me about your experience of the FFIT programme. I would just like to confirm that you have provided full consent to participate in this research and you have the right to withdraw at any time.

Can I just check that you are still happy to go ahead with this interview?

(If respondent agrees). In order for us to keep a good record of people's views we would like to record this interview. Please can you confirm that this is OK for you?

(If respondent agrees). Thank you. The audio-recording of the interview will be transcribed verbatim and digital and paper copies will be stored securely according to our MRC guidelines. Please feel free to speak your mind and be as honest as possible in response to each of the questions. We are really keen to hear your views so that we can take these into account in developing FFIT in the future. Everything you say will be kept in strictest confidence.

I am very interested in hearing about certain aspects of the FFIT programme and whether taking part in the programme has had any effect on various aspects of your life and health. If there are any questions you don't want to answer for any reason we can just move on to the next.

Section 1: Perceptions of receiving health-related feedback

Before and after taking part in the FFIT programme you took part in measurement sessions at the football stadium or at home.

- I am very interested in hearing about your experiences of receiving feedback about these measurements; please tell me in as much detail as possible, what it was like having these measurements done and hearing any results?

Probe in relation to:

- Blood pressure measurement;
- Body weight (BMI and waist circumference);
- sedentary behaviour/physical activity questionnaire;
- Completing self-report questionnaires;
- Respiratory function

- What was it like getting the feedback? Were there any things that pleased/surprised/upset you?
- Did this feedback make you think differently about yourself?
 - Prompt, in what ways did this information influence perceptions of health?
- Did any of the feedback make you want to make any changes in your life?
 - If so, how did this information motivate any changes in behaviour?
- Have you discussed your feedback with anyone else? (Probe, with whom and what was discussed i.e. with family members, other men on FFIT programme etc)

Section 2: Experience of wearing pedometers/ActivPALs

As part of the physical activity component of the programme you were given a pedometer to help you keep track of your physical activity levels. I am interested in hearing about your experience of wearing the pedometer, both during and after completion of the programme.

- Tell me what it was like wearing the pedometer?
- Overall, how useful did you find the pedometer as a means of increasing your activity levels? In what ways did it help?
- Did wearing the pedometer ever cause you any problems? If yes, can you tell me a bit more about that?
 - Prompt, for any negative factors or barriers to using the pedometer if not mentioned
- People often say that walking is a good way for someone to increase their physical activity levels. In what ways do you agree, or disagree with this?
- Since you completed the programme, have you managed to stick your physical activity goals/recommendations?
- Do you still find the pedometer helpful? (if yes, probe for how it is still being used; if no, probe for when/why pedometer is no longer used)
- And what about the ActivPAL? What was it like wearing this? (Prompt, do you think it changed what you did during the course of the week in any way? Did you experience any problems with it? Etc)

Section 3: Impact of personalised external visual feedback

You should recently have received a personalised feedback letter from me giving you information on some of the measures of physical activity and health-related information recorded before and after participation in the programme.

- Please tell me in as much detail as possible what it was like to receive this feedback?
- What were your first reactions?
- Did you have any preconceptions of what your feedback might be like?
- Was the feedback as you expected?
 - If yes, in what ways?
 - If no, in what ways was it different/unexpected? What things surprised you?
- Was the feedback interesting or helpful to you? (If yes, in what ways? If no, is there some feedback that you would have found more helpful (probe for what)?

- Do you think the feedback has had any impact on your physical activity levels?
 - If yes, in what ways? If no, why not?
- Thinking about looking at your daily step counts from your pedometer, and the feedback from wearing the ActivPAL, which feedback about your physical activity did you find most helpful (probe, Why was that?)?
- Were there any ways in which any of the feedback was unhelpful/negative?
 - Prompt, eg demotivating, demoralising, etc?
- How easy was the feedback to make sense of? Do you think it could be presented in a different way that would have been more helpful? (Prompt –how? Etc)
- Which parts were most/least interesting or helpful?
- How did you feel about having your physical activity levels objectively measured?
- Have you discussed your feedback with anyone? (Probe, with whom and what was discussed? i.e. with family members, other men on the FFIT programme etc)

Section 4: Adoption of various aspects of the programme and impact on family members.

I would like to ask you which parts of the programme you have found to be most useful and you feel have had the most impact on various aspects of your life.

- In what ways, if any, did you make changes to your life whilst you were doing the FFIT programme?
- How are you feeling now about the changes you have made?
- Which ones do you think you will keep up? Are there any that you think you won't keep up with?
 - Probe, why?
- What aspects have you to be found most/least useful/beneficial?
 - Probe, why?
- In what way have any of these changes influenced other members of your family? If so, how and why?

Probe in relation to:

 - Exercise/physical activity;
 - Diet/food choices;
 - Alcohol consumption;
 - Other lifestyle factors etc.
- Have you encountered any problems/barriers with regards to making any of these changes?
 - Probe, if so, how were these overcome?
- In what ways have your family been supportive of your participation in the programme and in making some of these changes? Are there any ways in which they made it more difficult to make changes to your life and lifestyle?
- What reactions, if any, have you had from other people since you started the FFIT programme? (probe family, friends, colleagues. Probe; comments about how they look, about them losing weight, taking part in a health programme)

- Is there anything else you would like to discuss in relation to the areas covered in the interview?
- Is there anything else you would like to say about the FFIT programme?

Appendix 8 - Voucher letter for telephone interviews



SPL Football Fans in Training (FFIT): Telephone Interview: Experience of the FFIT Programme

Insert Date

Dear ...,

I would like to thank you for taking part in a recent telephone interview with myself asking you about your experiences of the FFIT programme. Your views are very valuable to us and will assist us in developing FFIT in the future.

Please find enclosed a **£20.00** club shop voucher as a small token of our appreciation for your time.

If you would like to talk over anything in connection with this research, please don't hesitate to contact me:

Telephone: 0141 357 7566

Mobile: 07909 874 640

E-mail: c.donnachie@sphsu.mrc.ac.uk

Thank you again for all of your help.

Craig Donnachie

PhD Student

MRC | CSO Social and Public Health Sciences Unit

4 Lilybank Gardens, G12 8RZ

Appendix 9 - Protocol for activPAL

OBJECTIVE MEASUREMENT OF PHYSICAL ACTIVITY AND SEDENTARY TIME PROTOCOL

Standard Operating Procedure

Title: Objective Measures of Physical Activity and Sedentary Time using ActivPAL3 physical activity logger.

Purpose of SOP: To describe the procedures for objectively measuring participant physical activity and sedentary time.

An ActivPAL is a small electronic monitor developed specifically for the purpose of quantifying free-living physical activity. The device is attached to the centre of the right thigh and measures time spent; standing, stepping, sitting or lying down. The ActivPAL monitor houses a microprocessor which controls the processing and recording of the sensor signal and communication with a host Personal Computer (PC).

Equipment: ActivPAL3 physical activity logger.

Set up of Equipment:

All of the ActivPAL monitors must be set up and fully charged prior to fieldwork commencing. In order to initiate a recording session, each ActivPAL device must be connected to a host PC via slot one of the docking station or a micro USB cable and charged for a minimum of two hours to fully recharge the battery. From the ActivPAL software file menu, select 'Connect to ActivPAL' and click on 'Setup New Recording' then enter the start condition, number of days, start time, stop time and recording identifier. To initiate the ActivPAL device for recording select 'Program' and a box should appear indicating that the ActivPAL has been programmed successfully then click on 'ok'. An orange light on the monitor will begin to flash intermittently as the memory status is verified. At this phase the monitor can be disconnected from either the docking station or micro USB cable. Following a successful programme and memory status check a green light will illuminate three times and then again every few seconds to indicate the device is recording.

Attaching device to man:

- The device must be attached to the front of the participant's right thigh, half way between the knee and the hip.
- To affix the device it must firstly be housed inside a protective nitrile sleeve. An arrow should then be drawn on the front of the monitor sleeve pointing upwards, signifying to participants the correct positioning of the device.
- Two 10cm X 13cm strips of waterproof hypafix transparent dressing should be cut. Choose one of these strips and remove each of the four corners with a pair of scissors. This piece is used to wrap the ActivPAL device and make the ActivPAL waterproof. Make sure that there are no sharp edges sticking out which may cause irritation or discomfort when stuck on to the thigh. The second piece is used to affix

the monitor to the participant's thigh. It is essential that each monitor is entirely covered in order to provide a complete waterproof barrier.

- After the device has successfully been housed inside the nitrile sleeve and wrapped in the first layer of waterproof tape, the second piece of tape should be applied over the ActivPAL to fasten the monitor to the participant's right thigh.
- The participant should secure the monitor themselves under the supervision of the researcher. The participant should be given an opportunity to change into a pair of shorts so that they can do this without embarrassment and the researcher should try to ensure that they have sufficient privacy (e.g. using screens) wherever possible. Firstly, the front backing of the tape should be removed by peeling from the middle. The adhesive side of the tape should be placed down onto the participant's right thigh, about half way down, with the middle part aligned with the centre part of the ActivPAL. Finally, the back piece of the backing should be removed and pressed upon firmly to secure the dressing (see figure 1).
- This arrangement should enable the participant to wear with device for a period of seven days without having to remove it. Each participant should be asked whether or not they partake in regular activities where they are fully submersed under water (such as swimming or regular baths) and provided with spare pieces of tape to re-apply the device if it is removed. Every participant must be provided with at least four spare pieces of tape to enable them to re-attach the device if it comes loose or falls off during the period of wear.

Exclusions: Participants in a wheelchair cannot be measured.

Instructions to participants:

Participants are required to change into shorts and sit in a chair with their upper thigh visible. Where possible screens will be available to give the men a degree of privacy.

Each participant will be briefed according to the information outlined above on how to attach and re-attach the monitor.

It will be made completely clear to all participants they are able to wear the monitor whilst showering, however if they plan to take a bath or go swimming the **ActivPAL monitor must be removed** and subsequently re-affixed.

Each participant will also be instructed to review their dressing on a daily basis to ensure there is no irritation or discomfort as a result of wearing the ActivPAL monitor. If participants experience any problems such as itchy, sore skin, they are told to remove the device without delay. They will be told that they can contact the researcher (**Craig Donnachie: 07969998091**) during the week that they are wearing the device if they have any questions.

Participants will be reminded that the ActivPAL monitor will be worn for a period of seven days at the beginning and at the end of the programme and informed the ActivPAL monitor

will be collected from them by the researcher the following week. They should also be reminded not to remove the device unnecessarily during this time.

Measurement:

When the ActivPAL monitor has been attached in the correct manner and configured appropriately, the device will automatically record participants sitting/lying, standing and stepping time.

Feedback to participants:

Participants will be given the option of receiving feedback in the form of a printout summary of their weekly activity levels. They will be informed that this information will enable them to identify specific periods throughout the week where they are sedentary and active and perhaps enable them to identify times when they are more sedentary than they had previously thought, or times when they could more easily incorporate additional activity into their life.



Figure 1. Image of ActivPAL securely attached in correct position.

Appendix 10 - Example of framework matrix

A	B	C	D	E	F	G	H	I
	A : 3.1 Shock	B : 3.2 Perception of risk	C : 3.3 Motivator or prompt for action	D : 3.4 Confirmation	E : 3.5 Reference point for comparison	F : 3.6 Emotional reactions	G : 3.7 Prompt for further health-related assessment	H : 3.8 Receiving objective feedback
<p>1 : 16116F</p> <p>5% weight loss at 12-weeks = Yes</p> <p>Age = 33</p> <p>BMI (Baseline) = 31.70</p> <p>BMI Classification (WHO) = Obesity I</p>	<p>When measuring your belly, you go on your waist, rather than belly size and your waist is always smaller than your belly measurement would be.</p> <p>I can't say I was particularly surprised by my waist size, given that you've always got a sense of your waist size. The size round your belly is always bigger and that is eye-opening, but it didn't surprise me. I know I had a bit of a belly on me.</p>	<p>It wasn't a worry to me. I'm maybe unusual to some of the other people on it, I'm at the younger end of the scale, it's not like I've been to the doctors very often.</p>	<p>It was helpful to get a sense of what those are - particularly at the start, to give you a baseline and inspire you to try and drop those numbers and improve things along the way.</p> <p>It inspired me to go and get my own set of scales again, to get a sense of what my weight was and how I was moving along the programme.</p> <p>Nothing upset or surprised me, hearing things like what your BMI is regarded as and what band it is within, didn't surprise me, just reinforced to me that I had to, you know, I could really do with making a change.</p> <p>Didn't think differently about myself. I'm quite intelligent - I'm not daft - I knew I ate too much and didn't do enough exercise to use up what I was eating, so I had</p>	<p>I had a sense of what my weight was, anyway, I knew it was obviously on the high side, and likewise, my BMI - I had a sense of where it was.</p> <p>Hearing things like your BMI and was what band that's within, it probably didn't surprise me, just reinforced to me that I could really do with making a change.</p> <p>I can't say I was particularly surprised by my waist size, you've always got a sense of what your waist is. The size around your belly is always bigger I suppose that is eye-opening, but it didn't surprise me. I know I had a bit of a belly on me.</p> <p>Didn't think differently about myself. I'm quite intelligent - I'm not daft - I knew I ate too much and didn't do enough exercise to use up what I was eating, so I had</p>	<p>It was helpful to get a sense of what those are - particularly at the start, to give you a baseline and inspire you to try and drop those numbers and improve things along the way.</p> <p>I suppose if you had a leaflet, that almost gave you in terms of, I don't mean heres, the country, but the population of all the people that have been on FFIT previously, here's where where those averages are and your figures are against them. It gives you a sense of where you're at and how your compare.</p> <p>I'm at the younger end of the scale, it's not like I've been to the doctors very often, blood pressure, for example, I had no idea what it was. Maybe others that have already done those things and don't need that comparator, they know where</p>	<p>Anything surprise or upset me...?</p> <p>Nothing upset me. Hearing things like where your BMI and what category it is within, didn't surprise me just reinforced I could really do with making a change.</p> <p>You know, at the start of the process, certainly, but nothing upset me.</p>	<p>At the start, there was a suggestion my blood pressure was a wee bit high. I was told on the day to go and see my GP to get it checked out. So in terms of feedback, I guess that was helpful.</p>	<p>Sometimes you else to sort of, were telling you weight, but since else taking the kind of gives you reinforcement of these figures the high side, c</p>
	<p>It was fine, it was nothing really I didn't expect. I'm diabetic so go through that rigmarole reasonably quickly. I do it quite a lot. So it wasn't anything I found shocking</p>	<p>I suppose hearing about how it can effect you going forward... I'm not saying I was blind to it 'cause I was aware of it's just the kind of reinforcement of it.</p>	<p>The overall weight was the one that made me think I actually need to do something and lose it. But I don't think it was the result of feedback. It was probably more</p>	<p>It was just confirmation I was heavier than I've ever been that's what influenced me.</p> <p>I'm not saying I was blind of it</p>				

Appendix 11 - Example of coding process

Nodes							
<div> <div>Nodes</div> <div> <div>Coding and Themes</div> <div>Interview Nodes</div> <div>Sources</div> <div>Thematic Framework</div> <div>Relationships</div> <div>Node Matrices</div> </div> </div>							
<div> <div>Look for:</div> <div>Search In</div> <div>Thematic Frame</div> <div>Find Now</div> <div>Clear</div> <div>Advanced Find</div> </div>							
Thematic Framework							
Name	Sources	References	Created On	Created By	Modified On	Modified By	
1 Factors facilitating enrolment or attendance at measurement sessions	14	52	15/04/2014 16:24	CD	02/05/2014 11:30	CD	
1.1 Perceived issues around health status	12	21	16/04/2014 14:22	CD	02/05/2014 12:20	CD	
1.2 Challenges participating in valued activities	4	4	16/04/2014 14:24	CD	23/04/2014 10:54	CD	
1.3 Barriers to health or fitness	8	14	15/04/2014 16:24	CD	02/05/2014 12:20	CD	
1.4 Other	0	0	16/04/2014 14:25	CD	16/04/2014 15:43	CD	
2 Experiences of being objectively measured (before starting the programme)	26	171	16/04/2014 15:49	CD	24/04/2014 11:42	CD	
2.1 Perceived support from research staff	16	30	16/04/2014 17:09	CD	30/05/2014 15:42	CD	
2.2 Communication of information	14	29	17/04/2014 14:28	CD	23/04/2014 10:54	CD	
2.3 Anticipation	6	14	17/04/2014 11:15	CD	30/05/2014 13:27	CD	
2.4 Familiarity with health-related assessments	17	27	17/04/2014 11:37	CD	23/04/2014 10:54	CD	
2.5 Context and setting	6	10	16/04/2014 16:27	CD	23/04/2014 10:54	CD	
2.6 Other	6	9	16/04/2014 17:10	CD	30/05/2014 15:42	CD	
3 Impact of receiving information on objective health-related metrics	28	399	16/04/2014 10:17	CD	07/05/2014 17:12	CD	
3.1 Shock	27	61	16/04/2014 10:18	CD	30/04/2014 08:58	CD	
3.2 Perception of risk	18	38	16/04/2014 10:19	CD	16/05/2014 12:39	CD	
3.3 Motivator or prompt for action	28	128	16/04/2014 10:24	CD	02/05/2014 12:20	CD	
3.4 Confirmation	20	62	24/04/2014 11:39	CD	24/04/2014 14:16	CD	
3.5 Reference point for comparison	11	32	16/04/2014 10:26	CD	24/04/2014 11:41	CD	
3.6 Emotional reactions	19	52	16/04/2014 10:27	CD	29/04/2014 18:37	CD	
3.7 Prompt for further health-related assessments	7	14	16/04/2014 10:30	CD	24/04/2014 11:42	CD	
3.8 Receiving objective feedback externally (by someone else)	7	12	16/04/2014 10:32	CD	28/04/2014 16:06	CD	
3.9 Other	0	0	16/04/2014 10:32	CD	24/04/2014 11:42	CD	

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