

A Mixed Method Investigation into the Perception and Measurement of Success in the Healthwise Exercise Referral Scheme

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Abstract

Taking part in physical activity is a complicated phenomenon, tied up in social, cultural and economic environments. Researching an exercise referral scheme in an applied setting therefore requires consideration of a wide variety of influences. The objective of this research was to elicit a comprehensive understanding of the concept of success within an exercise referral scheme. Recognising the complexity of the experience, the research design embraced a holistic approach. An uncontrolled population-based cohort approach maximised the ecological validity of the findings. The study used a mixed methods design (triangulation design- convergence model), with quantitative and qualitative methods implemented simultaneously, within the same time-frame and with equal weighting.

The qualitative phase comprised of three parts. Four focus groups were carried out with referred patients (n=17), individual interviews with facilitators (scheme providers) (n=4) and individual interviews with referring health professionals (n=7). Grounded theory methodology guided the analysis resulting in three models depicting the concept of success for the three parties involved. These results were subsequently combined to form one overall model of success for the scheme.

The quantitative phase investigated patients referred to the scheme during a three-year period (n= 1315). The data comprised of the routinely collected patient data obtained as part of scheme protocol. Logistic regression was conducted to examine the influence of several independent variables (such as demographics) on the outcome variables (attendance, weight loss and blood pressure reduction). This resulted in three models depicting the influences on the measures of success. The results show significant associations between age ($\text{Exp}(\beta)=1.019$; 1.008- 1.030), ethnicity ($\text{Exp}(\beta)=6.310$; 1.388-28.695), the pulmonary referral reason ($\text{Exp}(\beta) =0.546$; 0.346-0.860) and attendance. The mixed ethnic category ($\text{Exp}(\beta)=3.991$; 1.191-13.373) and attendance ($\text{Exp}(\beta)=3.541$; 2.721-4.608) were significantly associated with weight loss. The results also indicate that the skilled manual occupation ($\text{Exp}(\beta)=1.875$; 1.044-3.227), attendance ($\text{Exp}(\beta)= 1.680$; 1.250-2.003) and weight loss ($\text{Exp}(\beta)= 1.292$; 1.008-1.641) are associated with blood pressure reduction for this scheme.

The quantitative and qualitative results were then interpreted and combined to gain insight into the concept of success. This highlighted the multidimensional nature of the concept of success. Success embraced a wide range of notions (i.e., enjoyment, weight loss, making friends and knowledge) evident from the examination of different types of data and the perceptions from the different people involved in the process. Shared components of success were also highlighted. The routine markers of success, such as levels of attendance, weight loss and blood pressure, demonstrate how success has been conceived previously by those developing and evaluating schemes. In practice success is valued, observed and appreciated in a more holistic manner.

By unpacking success as a concept, these findings can enable future evaluation to be more representative of the genuine impact of exercise referral. Future schemes could benefit from developing specific protocols to capture all the aspects of the concept of success which were discovered by the present research. . This context specific evidence should aid the application of the present findings to future practice and research. Furthermore, evidence has been added to the current evidence base regarding the value of exercise referral for public health.

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Publications

Abstract;

Mills, H., Crone, D., Johnston, L & James, D. (2007) 'Even if you can't skip, you have a skip in your step when you walk out of the gym': A study into patients' perceptions of an exercise referral scheme. *Journal of Sport Sciences*, 25 (S2), 108-109.

Book Chapter;

Mills, H., Crone, D & El Ansari, W. (in press). Key concept 22: Physical activity and public health. In S. Watkins & A. Mabhala (Eds). *Fifty Key Concepts in Public Health*. London: Sage.

Chapter 1: Introduction

1.1: Introduction

Physical inactivity is widely acknowledged to be linked with an increased risk of several chronic diseases, including cardiovascular disease, obesity, diabetes and osteoporosis (Pate et al., 1995; Wanless, 2003). Physical inactivity has also been associated with a greater prevalence of mental health problems, such as depression (Biddle, Fox, & Boutcher, 2000; Wanless, 2003). Regular physical activity can be used for the prevention and treatment of these numerous diseases; the evidence for leading a physically active lifestyle for positive health benefits is compelling (T. Grant, 2000; Wanless, 2003).

Despite the evidence it is estimated that approximately two-thirds of men and three-quarters of women in England are insufficiently active for health (Department of Health, 2003c). The current recommended level of physical activity to benefit health in adults is 30 minutes of moderate intensity exercise five or more days a week (Department of Health, 2005b). By 2020 the Government aims for 70% of the population to meet the recommended levels of physical activity (Department of Culture Media and Sport, 2002). Certain population groups tend to be less active than others, physical inactivity is not distributed equally across the population (Department of Health, 2003c), and this is often the same groups that report poorest health (Department of Health, 2003b). Attempts have been made to target these populations through health promotion strategy and policy (Department of Health, 1999b). Consideration of the characteristics of these populations may enhance the effectiveness of interventions that promote physical activity (Department of Health, 2005b). Successfully increasing physical activity levels could therefore potentially help to reduce health inequalities.

Targeting population groups in this manner can be achieved through the use of strategies, such as those found within Exercise Referral Schemes (ERS) (also referred to as Physical Activity Referral Schemes or General Practitioners Referral Schemes). ERSs involve the

referral of patients from primary care into a recognised system with appropriately qualified exercise professionals, to undertake a programme of exercise (Department of Health, 2001a). ERS have become one of the most popular interventions to tackle inactivity (Crone, Johnston, & Grant, 2004). The number of ERS in operation has increased rapidly from 157 reported schemes in 1994, to more than 800 across the UK in a 2004 survey (Labour Research Department, 2004). Recently, it has been estimated that there may be as many as 1,300 schemes nationwide (The Mental Health Foundation, 2005). It has however been proposed that the expansion of ERS in the UK has been based on limited government policy and evidence (Cavill, in press).

The Government document 'Choosing Health' (Department of Health, 2005b) emphasises evidence as being central to effective planning and delivery of interventions. However, what constitutes evidence is often challenging to define. Traditional approaches to evidence-based health care have tended to support quantifiable measures of effectiveness (Speller, Learmonth, & Harrison, 1997). Such measures have been criticised as only providing a crude indication of the health of participants (I. Shaw, 1997).

There is now increasing recognition that qualitative methods are needed to complement quantitative methods as a means of exploring issues relating to how interventions work and how they can therefore be refined (Dugdill, Stratton, & Watson, in press). It has been recommended that those who assess the success of exercise referral interventions should incorporate qualitative, as well as quantitative measures to gather evidence (C Gidlow, Johnston, Crone, & James, 2008; McNair et al., 2005). This is particularly relevant in non-medical forms of healthcare (such as ERS), as they may provide more subjective outcomes and benefits for participants.

Previous schemes have been criticised because they have been commonly established without a standard format, lacking in criteria for the referral of patients or quality control measures and considerations (Hillsdon, 1998). The National Quality Assurance Framework (NQAF) (Department of Health, 2001a) addressed this issue and provided

guidelines for exercise referrals with the aim of improving standards among existing ERS and helping the development of new schemes. The NQAF (Department of Health, 2001a) advocated that an intervention should be a positive patient centred process and should help the patient towards an independent, physically active lifestyle. In order to achieve this patient centred approach the patients' perspectives and opinions regarding the scheme need to be fully explored and understood (Crone, Smith, & Gough, 2005).

Researching an operational ERS is complex, as taking part in physical activity is a complicated phenomenon, tied up in social, cultural and economic environments. Despite this, recent research and subsequent advice regarding ERSs is reliant on data obtained from randomised controlled trials (RCTs), for example the results produced from the National Institute for Health and Clinical Excellence (2006d). Controlled research of this nature strives to maximise internal validity, controlling for the effects of confounding variables by using strict experimental controls (Rothwell, 2005). Although this permits the detection of intervention effects it is often at the expense of ecological validity (i.e. extent to which a research setting replicates practice) (Rothwell, 2005).

Ecological validity can be maintained through the use of more uncontrolled research which, in the context of ERS can then take place within a functioning intervention. This method can provide context specific evidence and facilitate the application of findings to future practice (Evans, 2003). The limited ecological validity associated with experimental research suggests that alternative complementary approaches could be valuable. Uncontrolled population-based cohort studies within an applied setting could provide an insight into a range of other areas. Previous research has used this method to examine the socio-demographic influences on referral uptake (C Gidlow et al., 2007). Within the ERS context, this uncontrolled population cohort method could provide further insights regarding the characteristics of the patients that utilise the scheme and their experiences of a functioning ERS.

With complex interventions, such as exercise referral, consideration needs to be given to the content of the intervention and the circumstances under which it is administered as

this may contribute or even be responsible for the success (Victoria, Habicht, & Bryce, 2004). The success of a scheme is not just influenced by characteristics of the individual participant (such as age, sex, socio-economic status, current levels of activity), but also by other parties involved such as the referrers and the exercise providers who have an influence on the ERS delivery mechanism (Dugdill, Graham, & McNair, 2005).

It has also been highlighted that there is a need for attention to be given regarding psychosocial and social networks in referral programmes (Hardcastle & Taylor, 2001). In order to achieve this ERS research needs to broadly incorporate all dimensions of health, including well-being and social influences. Further information is therefore needed on the ways in which participants experience programmes, allowing all consequences including even those potentially unintended to be captured (Grypdonck, 2006). This illustrates the need to move away from the physiological measurement only model, which according to Gidlow, Johnston, Crone and James (2004) currently predominates in most ERS research. A broader investigation of quality experience, processes and health outcomes from the perspective of all parties involved would take into account these considerations. To effectively assess the impact of an ERS, and consequently make a judgement on the value what constitutes success needs to be clear. Decisions regarding the merit of schemes are often based on an element of success such as, the number of people who took part in the scheme, the level of attendance or the weight loss achieved. Success would therefore appear different depending on the measure reported. The social and psychological impact of schemes have begun to emerge in the research (Crone et al., 2005; A. H. Taylor & Fox, 2005) and these provide additional elements of success. In order to report and compare the impact of interventions it is vital to unpack the concept of success and the differences in the perception of success by those involved in the provision and experience of referral schemes.

1.2: Research objective

The objective of this research is to elicit a comprehensive understanding of success within an exercise referral scheme.

Through an exploration of insights identified from the examination of routinely collected ERS data, and the perceptions of the experience and effectiveness from scheme providers, referrers and participants, this will be attempted.

The current research endeavours to understand ERS success in its entirety, within an applied setting. Therefore a research design is used that recognises the complexity of the ERS experience embracing a holistic approach.

The findings from both research questions will be mutually informative providing a merged negotiated account of success. This integration will allow the thesis to offer insights into the concept and experience that could otherwise not be revealed. The approaches taken and their rigorous application, allows the thesis to provide a unique contribution to research in the area of exercise referral. This will provide evidence regarding the value of exercise referral in public health. Due to the mixed method nature of the thesis, one objective is stated. The objective is then addressed by two research questions that employ different methods to address the objective.

1.3: Research questions:

The following research questions were addressed in this research.

RQ1: What is success, as perceived by the three main parties (patient, facilitator, referrer) involved in the Healthwise Exercise Referral Scheme?

RQ2: Of the routinely collected scheme evaluation data, which of the independent variables are associated with the dependent variables?

The first research question (RQ1) is concerned with developing a concept of success directly from those involved in the scheme and its provision. The perceptions and views of the participants regarding the nature of success, its prerequisite conditions, and outcomes will provide a unique insight into the complete experience. The second research question (RQ2) addresses the associations between the routinely collected patient data (independent variables: age, gender, ethnicity, referral reason, occupation) with the indicators of success obtained (dependent variables: attendance, body weight and blood pressure).

As such this study is a unique enquiry because an in depth exploration of the concept of success in an existing exercise referral scheme has not to date been attempted. It is therefore distinctive not only in its focus, but also in the comprehensive and rigorous use of mixed methods. The integration of quantitative and qualitative methods in an equal, complementary manner to explore the concept of success in such a rigorous approach will provide further evidence regarding the role and value of ERSs for public health in the United Kingdom.

1.4: Public Health and Policy

The purpose of this section is to detail the emphasis the Government has placed on the promotion of health behaviour.

It is accepted that physical activity is important in relation to health, however, there is continuing debate about the level of activity required. During the past few years there has been a gradual shift from the overall importance of vigorous exercise to a greater acceptance of the health benefits of larger volumes of moderate intensity exercise (Department of Health, 2004a). Although some positive effects may occur with less activity (Blair & Connelly, 1994), a recognised level that provides reduced risk of a range of diseases is widely accepted as 30 min of at least moderate intensity physical activity a day on five or more days of the week (Department of Health, 2004a). This is not to say that vigorous activity is no longer considered important. Indeed, regular activity at this intensity is associated with the maximum benefit for cardio-respiratory fitness (Casperson, 1994), which in turn is independently associated with improved health outcomes (Blair & Connelly, 1994).

Public health is concerned not only with the consequences of inactivity for the individual, but also with the degree to which inactivity is prevalent in the entire population. The majority of adults in England do not participate in physical activity at levels that provide the full range of health benefits (Sport England, 2006). The Allied Dunbar National Fitness Survey (Health Education Authority, 1992) highlighted that more than half of the adult population were insufficiently active for health according to the guidelines at the time (> 3 x 20 minutes vigorous-intensity activity per week). The recent Government Physical Activity Action Plan regarding physical activity promotion demonstrated recognition of the problem of sedentary behaviour in Britain and the potential gain from effective intervention (Department of Health, 2005b). This recognition did start earlier in policy the Department of Health commissioned the first major national physical activity promotion campaign. Conducted by the Health Education Authority, the three year

Active for Life campaign (Hillsdon, Cavill, Nanchalal, Diamond, & White, 2001), promoted uptake of moderate intensity activity on most days (>5x30 min per week). Publicity was used in conjunction with a mass media public education programme. The campaign specifically targeted several priority groups: young women (16-24), middle – aged men (45-55), the over fifties, members of lower social economic groups, ethnic minorities and people with disabilities. Surveys revealed a small but significant rise in public awareness of new recommendations, that was higher in men and lower socio-economic groups, which suggested partial success in targeting (Hillsdon et al., 2001).

The Health Education Authority in 1995 produced a report, which examined physical activity across the country, which took into account region and provided information on the influence of social class. Results showed that more men in the manual group than in the non-manual group were classified as sedentary and that this was true for all regions. For example, 23% of Midlands men in manual workers' households were classified as sedentary compared with 13 % of those in non-manual households. Conversely there were also more manual workers classified as active at a moderate level or above and although not statistically significant each region had slightly more manual workers in the very active group. Women were also looked at and women in manual workers' households were slightly more likely to be active at a moderate intensity three times a week or more than those in a non manual household (Health Education Authority, 1995a).

The Government has been keen to shift the responsibility for health to communities and individuals and has therefore attempted to empower both individuals and communities to be adept to take responsibility (Garman, 2005). Saving Lives: Our Healthier Nation (Department of Health, 1999b) identified physical activity as one of the ways in which individuals could improve their own health. Targets listed included promoting greater participation by building on existing initiatives, such as exercise referral schemes (exercise on prescription) and targeting these programmes at specific population groups. This was followed by a series of National Service Frameworks (NSF) documents to implement Our Healthier Nation's aims and included references to increasing physical

activity in members of the population with coronary heart disease, diabetes, mental health problems and within the older generation (Department of Health, 1999a, 2000a, 2001b). Following these NSFs a physical activity specific Government strategy document emerged (Department of Health, 2004c), called At Least Five a Week. This reflective evaluation concludes that physical activity is not simply to be recommended but is in fact essential for the population's good health.

In 2002 the Department of Culture Media and Sport published Game Plan: A strategy for delivering Government's sport and physical activity objectives (Department of Culture Media and Sport, 2002). This was a more action orientated document and required collaboration between different Government departments. There was an overriding acceptance of the need to target disadvantaged groups. This comprised three types of initiative: opening up school facilities for community use; subsidisation to overcome barriers (extending ERS); and training to ensure consistent advice throughout the system. Game plan demonstrated further progress by identifying the specific measures to be targeted in specific populations.

In 2004-2005 the gradual rise of physical activity in the public health domain lead to several physical activity specific documents. At Least Five a Week (Department of Health, 2004a) and Choosing Health? Choosing Activity (Department of Health, 2004c), provided an overview of evidence to make a strong case for the promotion of current physical activity guidelines and identified various approaches for physical activity promotion. However, there was no mention of targeting disadvantaged groups. Following this however, Choosing Activity: A Physical Activity Action Plan did make reference to targeting specific groups. Furthermore, there was emphasis on the responsibility of the NHS for taking forward the health improvement agenda. The report specified the intention to provide Primary Care Trusts with the means to confront health inequalities and improve health.

Within recent Government policy there are issues that can be directly related to exercise referral. For example, there is recognition that health care-based physical activity can be

challenging if it's dependent upon the existing means for delivery, especially when staff are already under pressure (Department of Health, 2004c). Moving beyond the existing processes within the NHS, to create new physical activity specific routes for patients, makes a case for interventions such as exercise referral. These recent policies and strategy documents make increasing reference to the importance of routinely collected data to assess need and the effectiveness of interventions in an attempt to develop the evidence base to better understand what works (Department of Culture Media and Sport, 2002; Department of Health, 2005b).

The reduction in physical activity levels has been accompanied by a growing recognition in the general public of conditions such as mild depression, low self esteem, high stress and anxiety, along with poor coping. Increases in physical activity participation may have a substantial impact on the incidence of sub-clinical levels of mental ill health among the general public. This concept has been reflected in an increasing interest in research and policy concerning mental health. In a review of the treatment of depression in primary care services, the centre for Health Economics recommended the funding of research into effectiveness of non drug therapies (Freemantle et al., 1993). Exercise may offer substantial potential for improving the well being for many individuals.

It is disturbing that the diseases of inactivity have increased in prevalence in recent years. However, it is encouraging that each can be prevented or treated through regular participation in exercise. Understanding how to increase physical activity levels effectively in the population is an important issue, in order to achieve the possible health benefits from regular activity for individuals, communities and populations. This knowledge can be targeted to particular population groups in an attempt to reduce health inequalities. Saving Lives: Our Healthier Nation (Department of Health, 1999b) highlight the intent of the Government to reduce health inequalities. The importance of targeting more disadvantaged members of society has been a key objective in a number of National Service Frameworks for example those aimed at reducing coronary heart disease (Department of Health, 2000a), mental health problems (Department of Health, 1999a) and the problems faced by older people (Department of Health, 2001b). Recent public

health strategy documents have maintained the focus on health inequalities by setting out plans to target health behaviour of the more disadvantaged members of the population (Department of Culture Media and Sport, 2002; Department of Health, 2005a). Health inequalities remain a priority for the Department of Health for 2008-9, as set out in the NHS operating framework document (Department of Health, 2006). (See section 1.5.2 for a discussion of health inequalities).

1.5: Population Groups

The most disadvantaged members of society tend to lead less healthy lifestyles (Department of Health, 2003c). This chapter therefore considers the issues associated with those within the target groups. For example, the health concerns associated with ageing and also the specific needs and considerations associated with health inequalities and ethnicity.

1.5.1: Older adults

This section focuses on the effect of physical activity on the issues relevant to older adults such as the physical benefits, muscle strength and psychological aspects such as well-being and quality of life. Furthermore the effects on social functioning are also discussed. Additionally the barriers to exercise particularly relevant for older adults are also considered.

Ageing has been widely associated with a progressive decline in health, due to deterioration in the body systems and structures. There is a deterioration in the cardiovascular system and peripheral circulation, a progressive loss of bone and muscle mass and a reduction in muscle strength (M. E. Nelson et al., 2007). Some individuals retain their muscular strength and stamina well into old age, whilst others deteriorate and lose the physical capacity for independent lifestyles. The effects of lifestyle social environment accumulate over a lifetime (Blane, 2006). However, some deterioration is preventable and it has been suggested that diseases and conditions which are the primary cause of loss of function and independence in later life may well prove preventable. Physical activity can play an important role in maintaining health (A. H. Taylor et al., 2004). Preventative effects arising from regular physical activity in older age are at least as strong as those found in middle age for all cause mortality (I. M. Lee & Skerrett, 2001).

Within the 65-74 year old age group in England only 17% of men and 12% of women reach the current physical activity recommendations, while 52% of men and 61% of women are inactive. Among those aged 75 and above only 7% of men and 4% of women reach current recommendations, while 72% of men and 83% of women are inactive (Department of Health, 2000b). Gender issues are also reinforced within the ageing population, as women are in general weaker than men at all ages because of a smaller absolute body size and a smaller proportion of muscle (Department of Health, 2001b). Women are therefore more likely to be debilitated by loss of physical capabilities in old age than men.

Fear of falling can provide a significant limitation to daily activities (Department of Health, 2001b). Falls are a major cause of disability and the leading cause of mortality due to injury in older people aged over 75 in the UK (Health Education Authority, 1999). Exercise programmes, particularly strength training have been shown to be highly effective in reducing subsequent incidence of falls among older people (Province et al., 1995). A recent study in a nursing home also found that participation in exercise decreased the fear of falling and increased feelings of achievement and competence (Stathi & Simey, 2007). Injury during a fall is often related to poor bone health and osteoporosis.

Osteoporosis is characterised by decreased bone mass and structural deterioration of bone tissue, leading to bone fragility and increased susceptibility to fractures. This causes fear, anxiety and depression in patients (Department of Health, 2001b). Due to bone mass and strength progressively declining with advancing age, this disease primarily affects older people (Cummings et al., 1995). Although controversy still exists as to whether osteoporosis can be prevented, or alleviated by physical activity in old age, recent evidence suggests that high impact aerobic exercise is effective in maintaining bone mineral density in post-menopausal women and men over 50 years old. For example, aerobic exercise has been shown to lead to an increase in bone mineral density of the lumbar spine (Dalsky, Stocke, & Ehsani, 2003) and proximal femur (Welsh & Rutherford, 1996). Furthermore, high-impact aerobic exercise in individuals over 50

years has been found to inhibit bone reabsorption or even enhance bone formation (Welsh & Rutherford, 1996).

The process of aging along with bones also affects muscles, sarcopenia (loss of muscle mass associated with ageing) is one of the main causes of musculoskeletal fragility and reduced mobility in old age (Department of Health, 2004a). Physical activity can slow down the loss of muscle mass, but cannot stop it or reverse it (Benvenuti et al., 2000). The cause of sarcopenia is not clear, it occurs even in athletes who maintain very high levels of physical activity, which indicates that ageing is the key cause and that disuse accelerates the process (Roubenoff & Hughes, 2000). If older people cease doing physical activity, the loss of muscle mass and strength happens at an even faster rate than during youth and middle age because of the additive effect of ageing and disuse (Taaffe & Marcus, 1997). Loss of muscle strength in old age may contribute to the problem of osteoporosis by increasing the risk of falls and the possibility of bone fracture. Muscle weakness in the lower limbs has been found to be highly predictive of the incidence of falls (Chu et al., 1999). Muscle weakness is also likely to affect mobility in older people.

Mobility is the ability to complete everyday tasks requiring physical activity and mobility declines with age. Loss of mobility is connected to a decrease in muscle power (Bean et al., 2003). A review of studies concluded that physical activity is associated with reduced subsequent functional disability (Keysor, 2003). People with higher levels of lifestyle physical activity are more likely to maintain mobility. One study indicated that lifestyle physical activity was associated with maintenance of mobility among older people over a three-year period (Bean et al., 2003).

The benefits of physical activity extend to cardiovascular disease and are still as relevant for older people. In a systematic review, it was reported that in older men both cardio respiratory fitness and physical activity are inversely related to coronary heart disease risk (Batty, 2002). Furthermore, it has been reported that women aged 50-79 years who were more active had fewer coronary events and a lower total number of cardiovascular events compared with women who were less active (J.E. Manson et al., 2002).

It has been claimed that physical activity and psychological function in the older adult are related (American College of Sports Medicine, 1998). Physical activity can help improve the emotional and mental well being of older people. Physical activity is associated with reduced symptoms of depression in older people (Strawbridge, Deleger, Roberts, & Kaplan, 2002). Physical activity can also reduce anxiety in older people and enhance mood, even where there is no evident improvement in fitness (Arent, Landers, & Etnier, 2000). Interventions incorporating physical activity have had a positive effect on the mental health of older people. Studies investigating exercise and depression in the older population tend to report an inverse relationship between level of physical activity and depression scores (Barbour & Blumenthal, 2005; Hassmen, Koivula, & Uutela, 2000). It has also been shown that physical activity may also perform a protective function against developing symptoms of depression (Lampinen, Heikkinen, & Ruoppila, 2000). Furthermore for older adults whose self-efficacy may be deteriorating along with their functional abilities, physical activity may provide a mastery experience that leads to changes in self-efficacy, leading to improved well-being (McAuley et al., 2006)

Positive mood has also been shown to be more common in frequently active older adults than those with more sedentary lifestyles (Arent et al., 2000). Similarly effects have been reported for enhanced psychological well-being from physical activity in older adults (Biddle & Faulkner, 2002). Physical activity can have numerous positive effects on an older persons state of mind. (Yaffe, Barnes, Nevitt, Lui, & Covinsky, 2001). In a qualitative review of older adults it was proposed that physical activity might enhance quality of life in older adults without improving cardiorespiratory status. They postulated that the act of exercising might be beneficial in and of itself (Spiriduso & Cronin, 2001). Further qualitative research revealed that older people acknowledge positive outcomes such as a positive attitude and a sense of purpose (Reichstadt, Depp, Palinkas, Folsom, & Jeste, 2007).

It has been shown that the opportunities for social interaction provided by physical activity is an important motivation and benefit associated with physical activity for older

people (Finch, 1997; Reichstadt et al., 2007). Studies have reported positive social benefits from exercise interventions involving older people (Hardcastle & Taylor, 2001; Riddoch, Puig-Ribera, & Cooper, 1998). In a meta-analysis of a collection of randomised controlled trials examining the benefits of exercise in the elderly, exercise created a small but significant improvement in the emotional health component of a quality of life measure, however these were only trends towards an improved social component (Schechtman & Ory, 2001). Research directly examining the social benefits of exercise is limited, however such benefits do appear to be plausible.

Physical activity offers a multidimensional beneficial effect on independence, physical, mental and social aspects of well-being for older people (Stathi, Fox, & McKenna, 2002). The beneficial effects of physical activity on both physical and psychosocial components of health are likely to be related for older people. Although not fully established it is likely that functional ability is particularly critical to mental health, due to the need to maintain independent living to function successfully within the community (Netz, Meng-Jia, Becker, & Tenenbaum, 2005).

There is a need for evidence-based approaches to physical activity promotion in older adults. Promoting physical active lifestyles requires more than isolated programmes, a multi level approach focusing on active living is needed. Programmes that recognise the broad range of capacities among older adults and take into account their needs and lifestyle choices could contribute to a more active older adult population (Stathi, in press)

1.5.2: Health inequality

This section provides an introduction to health inequalities. There is an increasing level of attention within this subject, yet health inequalities remain both difficult to measure and explain (Goldman, 2001). Physical activity research has clearly established the link between inactivity and poor health status in populations (Department of Health, 2005b). Health inequalities are important for the present study, as population groups who experience the poorest health outcomes have most to gain from exercise referral. The

exercise referral scheme detailed within the present research is situated in an area where prominent health inequalities are evident, and some of the groups are specifically targeted by the scheme. Therefore knowledge of differences in health will provide context for subsequent discussion regarding success of the scheme for various population groups.

Health inequality is the generic term used to designate differences, variations and disparities in the health achievement of individuals and health groups (Kawachi, Subramian, & Almeida-Filho, 2002). The term inequity as used in the World Health Organisation documents refers to differences in health, which are not only unnecessary and avoidable, but in addition, are considered unfair and unjust.

Most of the health inequalities across social groups (such as class and race) may be considered unjust as they reflect an unfair distribution of the underlying social determinants of health (access to education, safe jobs, health care) (Daniels, Kennedy, & Kawachi, 2000). In contrast, some views would deny any role of social injustice in the formation of health inequalities. Much of the debate revolves around the issues of free will and a person's responsibility for self care. Those who highlight individual responsibility tend to view health inequalities as the outcome of differences in how people make choices, whereas social determinists consider the same choices as arising out of inhibited and unfair circumstances (Kawachi et al., 2002).

There is a link between social inequality and individual health. How well and how long a person lives appears to be shaped by a person's place in the hierarchies built around occupation, education and income (Wagstaff, 2002). There are still health inequalities between groups and areas despite increased national prosperity, wider opportunity and improving health over the last twenty years. The gaps in life expectancy between different local authority areas are still evident. The reasons for these differences in health outcomes are complex; they are linked to people's social circumstances, such as where they live, their job, and income (McDaid & Oliver, 2005). There is a wealth of evidence demonstrating higher rates of premature mortality and various physical and psychological

morbidities in the most socio-economically disadvantaged members of the population (Department of Health, 2003b; Marmot & Shipley, 1996; Murali & Oyebode, 2004).

There is a need to increase the number of people from disadvantaged groups and areas adopting healthier lifestyles. There is a need to provide a range of important services relative to need in order to meet individuals' needs, including needs arising from issues relating to culture, and race. A fact addressed by recent policy, whereby health inequalities have become a priority for the Department of Health for 2008-9 as set out in the NHS operating framework (Department of Health, 2006). Health inequalities have been made a key priority putting the issue at the heart of policy and research (see section 1.4 for policy discussion)

1.5.3: Ethnicity and health

Differences in health across ethnic groups, in terms of both morbidity and mortality, have been reported in the UK (Erens, Primatesta, & Prior, 2001). The factors underlying these differences are still debated. It has been put forward that ethnic inequalities in health are principally determined by socio-economic inequalities (Sheldon & Parker, 1992). However others state that the social and economic inequalities actually make minimal or no contribution to ethnic inequalities in health (Wild & McKeigue, 1997). Others propose that even if they do contribute, the cultural and genetic foundations of ethnicity must also be a factor (Smaje, 1996).

Nazroo (2003) discusses data from the Health Survey for England, which shows a relationship between reported general health and economic position for each ethnic group. Those in more privileged socio-economic positions have better health. People from black and minority ethnic communities in England are among the most disadvantaged groups in our society, and are also among those least satisfied with the health and well-being services they receive (Department of Health, 2004d). There is therefore a need to ensure the services are expanded and targeted for patients and users from those communities. A study in America also highlighted similar issues (Powell,

Slater, & Chaloupka, 2004). The results indicated the importance of targeting interventions to low socioeconomic status areas and communities with minority populations. The associated barriers were found to be relatively high and the levels of physical activity low.

The process by which those in ethnic groups come to have poorer health is still not completely clear. It is evident that these differences are a consistent factor and should not be overlooked within research.

1.6: Exercise Referral Schemes

This section details exercise referral schemes and how they are addressed within policy, and how they are evaluated in order to determine the effectiveness and impact of the intervention.

Physical activity can be promoted in various ways and in a variety of settings (Kahn et al., 2002). Physical activity is a complex behaviour that incorporates interactions between personal attributes and environmental influences. Therefore physical activity can be influenced through interventions that target either the individual, community or population. One approach takes this into account by considering four levels of intervention for designing and implementing a physical activity programme, ranging from those that focus directly on the individual to those that focus at an environmental and legislative level (A. C. King, 1991). It is suggested that action at all levels within the model will result in population level behavioural change (Stathi, in press). It is apparent that interventions that reach the largest amount of people will have the most substantial impact on public health. As the scale of an intervention increases, its ability to take into account different needs of individuals and communities ought to still be maintained.

Interventions outside of primary care, such as those set in the workplace have been reviewed. Findings from the studies examining the effectiveness, demonstrate that these interventions are inconsistent in increasing physical activity (Proper et al., 2003). Community setting such as interventions that recruit from the home or leisure facility (for example, walking and cycling programmes) have been shown to be effective in producing short-term changes in physical activity, and are considered to be effective in producing mid- to long-term changes in physical activity (A. L. Dunn, 1999).

Within primary care some interventions incorporate advice, discussion, or negotiation. The interventions vary from basic advice giving to more extended, individually focused efforts to identify and change factors that influence activity levels. This advice has been

incorporated into other schemes and interventions (Sorensen, Skovgaard, & Puggard, 2006). There is considered to be sufficient evidence to recommended the use of these brief interventions within primary care (National Institute for Health and Clinical Excellence, 2006a)

Exercise referral schemes are another intervention from the primary care pathway into a recognised system with appropriately qualified exercise professionals to undertake a programme of exercise (Department of Health, 2001a). There is acknowledgement by public health commissioners that ERS provide only one small part of physical activity promotion for the population (Riddoch et al., 1998). This will ensure the development of different services to meet the specific needs of target populations, such as community walking programmes (Ashley & Bartlett, 2001). However, the recognition of the potentially important role that ERS play in meeting policy targets was revealed by the publication of the National Quality Assurance Framework (NQAF) guidelines (Department of Health, 2001a). ERS provide fully supervised physical activity to specialist populations and those who need more support.

Alongside the increased emphasis on promoting physical activity in primary care, the number of ERS in operation has increased rapidly. In 1994 there were 157 reported schemes (Labour Research Department, 2004) and it has been more recently estimated that there may be as many as 1,300 schemes nationwide (The Mental Health Foundation, 2005). It has however been stated that the vast expansion of ERS in the UK has been based on both limited government policy and evidence (Cavill, in press).

In the past schemes have commonly been established without a standard format, lacking in criteria for the referral of patients or quality control measures and considerations (Hillsdon, 1998). The NQAF (Department of Health, 2001a) addresses this issue and provides guidelines for exercise referrals with the aim of improving standards among existing ERS and helping the development of new ones. ERS normally require a partnership between health and exercise professionals. The schemes provide an opportunity to address inequalities in health care, disease prevention and improvement of

quality of life. The framework provides the guidelines for the partnerships to work to the benefit of the patient. The framework is an evidence-based guide endorsing individual prescription and motivating long term behaviour change, although evaluation and quality control are still under the control of the individual schemes (Department of Health, 2001a).

Schemes in the past have been criticised for not putting in place the necessary processes to enable high quality evaluations (Blamey & Mutrie, 2004). Therefore when it comes to measuring their effectiveness, researchers have frequently been limited to poor quality data (Blamey & Mutrie, 2004; C. Martin & Woolf-May, 1999). The evaluation of schemes is often seen as problematic and time consuming and therefore takes a lower priority compared to the delivery of the intervention (Dugdill, in press). The success of an ERS is often measured simply by its attendance levels, i.e. the number of participants a year who go through the scheme (Wright Foundation Conference, 2003) which can often be influenced by established service provision targets. The limitation of this approach is that the issues of quality (experiences of participants) are lost. The importance of developing quality delivery within ERSs has also been questioned (Crone et al., 2004). In published research on ERS, it appears that little process- based evaluation has taken place and more importance has been placed on outcome measures (C Gidlow et al., 2007). This may be due to process indicators being considered more difficult to assess and often requiring the adoption of a qualitative approach, which has previously been undervalued (C Gidlow et al., 2008). The NQAF recommends that there should be an agreement on appropriate expected outcomes from the schemes and appropriate assessments should be made at the beginning and end of a referral programme with accompanying data collection.

Evaluating a functioning ERS is complex, as taking part in physical activity is a complicated experience, tied up in social, cultural and economic environments. Taking part in physical activity is shaped over time by attitudes and beliefs towards exercising, confidence, and barriers to taking part in physical activity at the time. The success of a scheme is not just affected by characteristics of the individual participant (such as age,

sex, socio-economic status, current levels of activity), but also by other parties involved such as the referring health professionals and the exercise providers who have an impact on ERS delivery (Dugdill et al., 2005).

Another important issue in the debate about evaluation measurement that has been highlighted, is the need for attention to be given regarding psychosocial and social networks in referral programmes (Hardcastle & Taylor, 2001). For an ERS to be broadly focused on all dimensions of health and well-being, additional information is needed on the ways in which participants experience programmes (Crone et al., 2005). This highlights the need to step away from the outcome measurement only model, which prevails in most ERS research currently and to look for broader measurement of quality experience and health outcomes from the perspective of all parties involved, which incorporates both quantitative and qualitative indicators (Dugdill et al., 2005). Complex physical activity interventions may therefore require a mixed-method approach to capture the range of data (C Gidlow et al., 2008).

Chapter 2: Literature Review

2.1: Physical Activity and Health

This chapter explains the evidence for the impact of physical activity on health and will discuss physical, psychological and social health. Physical activity can help prevent and treat numerous medical conditions. However the physical activity has to be current and continued to offer protection (Wannamethee & Shaper, 2001). The American College of Sports Medicine guidelines suggest for health the amount of physical activity undertaken should be 30-45 min bouts, on 3 to 5 days of the week (American College of Sports Medicine, 2001). A British report from the Chief Medical Officer in 2005 increased the recommendations to 30 min of moderate intensity physical activity on five or more days of the week for general health, citing 45-60 min to prevent obesity (Department of Health, 2004a).

Cardiovascular disease is the greatest reason of mortality and morbidity in England, and is an important cause of loss of function in adults. Cardiovascular disease accounts for 39% of all deaths in men and women (Department of Health, 2004a). Half of cardiovascular disease mortality can be attributable to coronary heart disease and roughly a third to stroke. Cardiovascular disease accounts for substantial premature mortality (National Centre for Health Outcomes Development, 2003).

People with higher levels of physical activity have a reduced risk of coronary heart disease (Kohl III., 2001). Physical inactivity is a major independent risk factor for coronary heart disease. Inactive people have nearly double the risk of dying from coronary heart disease compared with those who are more active (Berlin & Colditz, 1990). People with higher levels of cardio respiratory fitness during young adulthood (18-30 years) have a lower risk of developing cardiovascular disease risk factors in later life, with obesity seeming to play a mediating function (Carnethon et al., 2003).

One study determined a physical activity score based on total activity, walking, vigorous exercise, and hours spent sitting for female participants (J.E. Manson et al., 2002) and an increasing physical activity score had a strong, inverse association with the risk of both coronary events and total cardiovascular events. The least active women had twice the risk of a coronary event compared with the most active women. Both walking and vigorous exercise were associated with comparable risk reductions, and the results did not vary considerably according to ethnicity, age, or body mass index (J.E. Manson et al., 2002). This data therefore indicates that both walking and vigorous exercise are clearly associated with substantial reductions in the incidence of coronary events. An inverse relationship between physical activity and the cumulative score of cardiovascular risk factors has also been recently observed (Pitsavos, Panagiotakos, Lentzas, & Stefanadis, 2005).

Hypertension (where blood pressure is chronically elevated) can be both prevented and treated by physical activity. Moderate intensity aerobic exercise is associated with reductions in both systolic, and diastolic blood pressure (Whelton, Chin, Xin, & He, 2002). A decline in blood pressure is considered a positive step in reducing the risk of coronary heart disease (Astrand, 1992). Both resistance exercise and aerobic exercise have been shown to be effective (G Kelley, 2001; G Kelley & Kelley, 2000). Physical activity mediated reductions in blood pressure are seen both in those who are overweight and those who are normal weight (Whelton et al., 2002). Mechanisms underlying the effect of physical activity on blood pressure have not been entirely clarified. A reduction in systemic vascular resistance (L. Nelson, Jennings, Esler, & Korner, 1986) or a decrease in cardiac output (Kinoshita, Urata, & Tanabe, 1988) may be responsible. Decreases in plasma level of norepinephrine have also been consistently observed (Duncan, Farr, & Upton, 1985; Kinoshita et al., 1988; L. Nelson et al., 1986) and changes in a number of humoral factors have been observed after exercise, such as insulin (Jennings, Nelson, & Nestel, 1986). Furthermore there is also some evidence that active adults tend to embrace other positive health behaviours, such as consuming a healthier diet and maintaining a more favourable body composition (Blair, Jacobs, & Powell, 1985). Despite the lack of consensus on the precise mechanisms, there is however,

substantial evidence from epidemiological studies to demonstrate blood pressure is lower in fitter and more physically active participants (Pescatello et al., 2004).

Exercise-based cardiac rehabilitation programmes for individuals with coronary heart disease are largely effective in reducing cardiac deaths and lead to significant reductions in all-cause mortality (British Association of Cardiac Rehabilitation, 2006). There is evidence that the formidable protective effect of physical activity on cardiovascular disease is transient (Department of Health, 2003b). Hence, people have a reduced risk of cardiovascular disease during the periods of life when they lead a physically active lifestyle, but they lose most benefits once they stop this physical activity (Paffenbarger, Wing, & Hyde, 1978). People can gain benefits from becoming more active, even if they have previously been inactive until middle age or beyond (Department of Health, 2004a).

There is less evidence regarding physical activity and stroke than coronary heart disease. However, it has been demonstrated by a meta-analysis of 23 studies that people who were highly active had a 27% lower risk of stroke incidence or mortality than less active people (C. D. Lee, Folsom, & Blair, 2003). Similar results were also seen in moderately active people compared with inactive people (C. D. Lee et al., 2003). A substantial study containing over 72000 female nurses also concluded that moderate intensity physical activity such as brisk walking was associated with a substantial reduction in risk of stroke (Hu et al., 2000).

Obesity has emerged as a serious threat to health with 22% of men and 23% of women now classed as clinically obese (Sproston & Primatesta, 2003). Obesity increases many health risks: it doubles the risk of all-cause mortality, coronary heart disease, stroke and type 2 diabetes, and raises the risk of some cancers, musculoskeletal problems and loss of function and brings various negative psychological consequences (National Audit Office, 2001). Physical activity can aid weight loss and it is recommended that for weight loss a person should be exercising for 30 min, five days a week, and as much as 60 min of activity each day if energy intake is not also reduced (Department of Health, 2004a).

Obesity is often defined in terms of Body Mass Index (BMI); this is calculated using the

equation weight (kg)/ height (m²). This produces a figure which has been categorised as normal weight (20-24.9), overweight (25-29.9), clinical obesity (30-39.9) and severe obesity (40+) (Di Pietro, 1999). The BMI is a population level utility and is used frequently to discuss obesity levels.

In all individuals weight gain occurs when energy intake is greater than energy expenditure. Thus, physical activity is likely to counteract weight gain. Physical activity on its own results in modest weight loss of around 0.5kg – 1kg per month (USA Department of Health and Human Services, 1996) The contribution of physical activity to weight loss can be largely explained by the direct increase in energy expenditure . The greater the activity level, the greater the contribution to weight loss (Slentz et al., 2004). It has been suggested that adults should expend around 400 kilocalories per day in physical activity in order to promote weight loss and to prevent weight regain (Jakicic, Clark, & Colmen, 2001; Saris, Blair, & van Baak, 2003).

Inactive people are more likely to be obese than those people who are active. An association exists between energy expenditure and lower fat mass; those with higher levels of energy expenditure tend to have a lower fat mass (Schulz & Schoeller, 1994). There is also an association between body mass index and self reported time spent inactive; inactive people are more likely to have a higher body mass index (Martinez-Gonzalez, Martinez, Hu, Gibney, & Kearney, 1999). Prospective studies have shown that high levels of leisure-time physical activity, remaining physically fit over the course of several years, or becoming fitter are related to lower risk of substantial weight gain (Di Pietro, 1999; Fogelholm & Kukkonen-Harjula, 2000). Cross-sectional studies have reported lower weight, BMI, or skin fold measures among people with higher levels of self-reported physical activity (Ching et al., 1996; DiPietro, 1995).

The higher the fat-free mass a person has, the higher the resting metabolic rate. The more calories used, the more energy the body can take in without storing excess as fat (Department of Health, 2004a). Physical activity has been shown to be effective in reducing abdominal adiposity in overweight or obese adults (American College of Sports

Medicine, 2001). Only a small proportion of those following energy intake restriction weight loss programmes maintain their weight loss in the long term (Wing, 1999). Those who achieve and sustain regular physical activity are more likely to retain a higher percentage of their weight loss for several months after a weight loss programme (Klem, Wing, McGuire, Seagle, & Hill, 1997; Wing, 1999).

There is evidence from observational studies to suggest that physical activity and higher levels of aerobic fitness are effectual in improving health not only of normal weight populations, but also of those who are overweight and obese (Grundy et al., 1999; C. D. Lee, Jackson, & Blair, 1998). Obese people who are active have a reduced risk of mortality and morbidity in a dose response manner, independent of others factors. The more active an obese person is, the lower their risk of mortality and morbidity (Grundy et al., 1999).

Overweight and obese people are more likely to be in the least active sector of the population and are less likely to take opportunities to be active (Cooper, Page, Fox, & Misson, 2000). Therefore they are more likely to gain further weight as they have difficulty achieving energy balance. People with obesity may benefit from being targeted by interventions and support systems. The government's recent strategy document demonstrates the on going focus on decreasing obesity levels. This strategy aims to 'reverse the rising tide of obesity' with the ambition to allow everybody to be able to achieve and maintain a healthy weight (Department of Health, 2008)

2.1.1: Physical activity and psychological health

A substantial body of evidence demonstrates the positive relationship between physical activity and improved psychological health (Biddle & Mutrie, 2001; A. Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005; Lawlor & Hopker, 2001; Saxena, Van Ommeren, Tang, & Armstrong, 2005; Stathopoulou, Powers, Berry, Smits, & Otto, 2006)

Evidence suggests that factors associated with the process of being physically active, rather than fitness itself are primarily responsible for the benefits in short and long term mental well being (Biddle, 2000). Many theories have been developed to explain the factors that mediate the link between exercise and psychological state. For example, it has been stated that exercise results in the release of endorphins, the brains natural opioids (Steinberg & Sykes, 1985). Other theories have also been suggested; for example, including that heat production (thermogenesis) and reduced muscle tension may contribute (Weinberg & Gould, 2007), the distraction hypothesis and the mastery hypotheses where an increase in skills and competencies improve well-being (Stephens, 1998). These mechanisms suggested come from a variety of disciplines including biochemistry, physiology and psychology (Carless & Faulkner, 2003). Despite numerous mechanisms being put forward a consensus is yet to be agreed upon (Crone, Smith, & Gough, 2006). Therefore no one specific mechanism has been confirmed as responsible (Carless & Faulkner, 2003).

Although the process by which psychological benefits occur is still open for debate within the literature, it is generally accepted that physical activity improves psychological well-being. This is reflected in improved mood and reduced state and trait anxiety (Biddle & Faulkner, 2002). It can also improve how people feel about themselves through improved physical self-perceptions and can improve self-esteem, particularly in those with initial low self esteem. The psychological benefits of physical activity are importance determinants of people's motivation to be physically active (J. King, Blair, & Bild, 1992). Wankel (1993) discusses the experience of exercise for participants in relation to adherence and psychological benefits. The importance of enjoyment for adherence and to derive benefits from exercise is highlighted.

There is an association between physical activity and feelings of subjective well being, improved mood, emotions, and quality of life. These effects are seen in populations of all ages and are independent of socioeconomic or health status (Biddle et al., 2000). Studies indicate that a single bout of physical activity can result in improved mood and vigour. After a single session of physical activity there are reported improvements in transient

moods, such as reduced anxiety (T. Grant, 2000). The reduction in anxiety may continue for 2 to 6 hours following a session of physical activity (Landers & Petruzzello, 1994). Regular daily physical activity is required to experience this on going calming effect. This effect can be sustained over several weeks in an exercise programme (A. H. Taylor, 2000).

Physical activity can also make people feel better about themselves (T. Grant, 2000). Positive changes are evident in overall physical self-worth as well as specific aspects of physical self-perceptions such as body image, perceived fitness and strength (Biddle & Mutrie, 2001). These changes have been shown in a randomised controlled trial in a primary health care setting (A. H. Taylor, Doust, & Webborn, 1998). Being fit and slim are weakly associated with positive physical self-perceptions, body image and in some populations body satisfaction (K. R. Fox, Page, Armstrong, & Kirby, 1994). This is important as these aspects of the physical self may be related to global self-esteem. This has been indicated by qualitative research such as Crone, Smith and Gough (2005) which demonstrated a theme of physical health and its relationship to self-acceptance.

The degree to which alterations in physical self-perceptions are accompanied by improvements in overall feelings of worth or general self-esteem is however variable. Exercise participation is weakly associated with global self-esteem in many studies but this relationship is inconsistent and is probably dependent on population, environmental and individual characteristics. Physical self-efficacy changes are greatest in those with low self-efficacy at the start of the exercise programme (McAuley, 1994).

The exercise and self-esteem model suggests that exercise behaviour is associated with global self-esteem via perceptions of self-efficacy, physical competence and physical acceptance (Sonstroem & Morgan, 1989). The influence of exercise self-efficacy perceptions on global self-esteem is mediated by perceptions of physical competence, which together with physical acceptance, influences self esteem (Furnham, Badmin, & Sneade, 2002).

Physical activity is associated with depression, people who are inactive are twice as likely to have symptoms of depression than more active people (Department of Health, 2004a). There is a consensus that there is a positive link between physical activity and depression (Mutrie, 2000), and that physical activity has been shown to be beneficial for mild to moderate depression (Faulkner & Biddle, 2004; Phillips, Kiernan, & King, 2003). Furthermore, the recommendations for aerobic exercise have been found to be effective as a treatment for mild to moderate depressive disorder (A. Dunn et al., 2005)

Intensity of exercise is another moderator of exercise effects. It has been declared that in order to alter mood, exercise intensity needs to be at least 60% of maximal aerobic power (Raglin & Morgan, 1985). Reviews however, have failed to expose a consistent pattern of dose-response effects between exercise intensity and positive affect (Biddle, 2000; A. L. Dunn, Trivedi, & O'Neal, 2001; Ekkekakis & Petruzzello, 1999).

Physical activity has the potential to have a positive influence on a person's well-being. The global 'feel-good effect' of exercise was addressed by a recent publication (Biddle & Mutrie, 2008). Following a review of the evidence on physical activity and various indicators of psychological well-being, including: mood, self-esteem and enjoyment, it was concluded that positive effects for exercise were shown across even diverse methods of investigation (Biddle & Mutrie, 2008).

2.1.2: Social factors

It is possible that improved psychological state is related to the social activity often associated with exercise and the resulting increased self-esteem (Department of Health, 2004a). Most people's behaviours are profoundly influenced by others around them. A person's actions are shaped by the cultural meanings of activities as well as social interactions (e.g., family and friends). Thus, when physical activity occurs, the social context of relationships, roles, and cultural meanings become important (Henderson & Bialeschki, 2005).

There is some evidence that physical activity programmes lead to changes in social networks and participation in social groups (Spirduso & Cronin, 2001). The opportunities for social interactions provided by physical activity were shown to be important motivations and benefits associated with physical activity, from qualitative research (Crone et al., 2005). A recent meta-analysis concluded that in fact the amount of contact and social support available (from other exercisers, health professionals etc.) was crucial (Burke, Carron, Eys, Ntoumanis, & Estabrooks, 2006). This research by Burke (2006) stated that as the amount of social support increased so did the beneficial effects of the intervention. The findings from the meta-analysis indicate that it is directly the social context that appears to aid effectiveness.

Other studies have reported positive social benefits from exercise interventions involving older people (Hardcastle & Taylor, 2001; Stathi, McKenna, & Fox, 2004). A randomized controlled trial showed that the exercise component was related to increases in satisfaction with life and reductions in loneliness (McAuley, Blissmer, & Marquez, 2000). In a meta-analysis of a series of randomized controlled trials investigating the benefits of exercise in the elderly, exercise created a small but significant improvement in the emotional health component of a quality of life measure but only inclinations towards an improved social component were identified (Schechtman & Ory, 2001). While research directly exploring the social benefits of exercise is limited such benefits do seem plausible.

2.2: Background Theories and Perspectives

Theories attempt to explain and predict peoples behaviours, within the context of health, theories endeavour to explain health behaviour and its influences. Theories and the accompanying models can guide researchers towards the development and implementation of physical activity and other health behaviour change interventions. Although the focus of this thesis is not centred on behaviour change theories, it is pertinent to discuss these principles as elements related to them have emerged from the findings. A successful ERS requires the adoption of physical activity behaviour, a discussion of the theoretical foundations of behaviour change will therefore help to provide an insight into developing the concept of success.

2.2.1: Medical models of health

The biomedical model typifies the physical perspective of health and disease. The biomedical model assumes disease to be fully accounted for by departure from the norm of measurable biological variables. This model, according to Engel(1977) leaves no room within its framework for the social and behavioural dimensions of illness. The biomedical model is clearly evident in the modern health services (Marks, Murray, Evans, & Willig, 2000). The attitudes and beliefs of doctors are moulded by this model even before they embark on their medical training. The biomedical model separates the person from the body and is based on a positivist epistemology. This approach has come in to a significant amount of criticism because of its apparent disregard of the social aspects of health (Marks et al., 2000).

Returning to and maintaining health is an active process involving seeking help, evaluating options and making decisions about treatments (Shah & Mountain, 2007). Individuals respond in various ways which are influenced by their life experiences, some people feel powerless, whereas others are motivated. The patient's task is to decide and

act on advice while making sense of complex and conflicting emotions they may have regarding physical activity.

To provide a basis for understanding the determinants of disease and arriving at rational treatments and patterns of health care, a medical model should also take into account the patient, the social context in which the person lives, the physician role and health care system (Engel, 1977). The boundaries between health and disease are far from clear and unlikely to be so, as they are influenced by cultural, social and psychological considerations. The biopsychosocial model highlights a shift away from focusing on symptom elimination and toward changes in function and activity (Shah & Mountain, 2007). The ways in which individuals experience, perceive, evaluate and respond to their own health status, can affect the outcome and response to an intervention (Fava & Sonino, 2008). However, the benefits of modifying lifestyle by population-based measures in a biopsychosocial approach are increasingly being demonstrated in the literature (Chiave, McCullough, Sacks, & Rimm, 2006; Fava & Sonino, 2005).

2.2.2: Social cognition theories of health

Social cognition theories are concerned with how individuals make sense of social situations and the models attempt to improve the understanding of the correlates and determinants of health behaviour (Connor & Norman, 2005). Among these social cognition theories are a number of models; Social Cognition Theory (Bandura, 1986), Theory of Reasoned Action (Fishbein & Ajzen, 1975) and Theory of Planned behaviour (Ajzen, 1991) and the Health Belief Model (Rosenstock, 1966).

Inductive analysis involves discovering themes and categories. Findings emerge via the grounded theory method from the data through the researcher's interaction with the data. Despite this, a description of these established theories of health is provided to enhance the confirmatory stage of analysis. The appropriateness of the inductive content is later discussed in light of these models of health to affirm the authenticity of the qualitative findings (Chapter 6). Therefore these theories provide pertinent principles and concepts

to consolidate and clarify findings that emerge from the research.

Social cognitive theory (Bandura, 1986) and its derivative self-efficacy theory (Bandura, 1997) have been regularly cited as a base for exercise interventions (Kahn et al., 2002). It is indicated that interventions founded on social cognitive theory, help to develop the motivational and self-regulatory skills that enable individuals to adopt healthy lifestyles (Bandura, 2005). Self efficacy theory states that the judgement of a persons capabilities to organise and execute required actions are the foundation for motivation, well-being, and accomplishment (Bandura, 1997).

The most effective way of creating a strong sense of efficacy is through mastery experiences. Successes build a robust belief in a person's efficacy, failures undermine it. If people experience only easy successes they come to expect rapid results and are easily discouraged by failure. A resilient sense of efficacy requires experience in overcoming set backs through persistent effort. People can then become convinced they have what it takes to succeed, they persevere in the face of adversity and quickly rebound from setbacks (Bandura, 1994).

The second way of establishing and strengthening self-beliefs of efficacy is through the vicarious experiences provided by social models. The influence of modeling on perceived self-efficacy is strongly affected by perceived similarity to the models. The greater the supposed similarity the more persuasive the models' successes and failures. If individuals see the models as vastly different from themselves their perceived self-efficacy is not much influenced by the models' behavior and the outcomes produced (Bandura, 1994).

Social persuasion is another way of strengthening a person's beliefs that they have what it takes to succeed. Individuals who are persuaded verbally that they have the capabilities to master given activities are likely to give greater effort and sustain it than if they have self-doubts and concentrate on personal deficiencies. Persuasive boosts in perceived self-efficacy lead people to try hard enough to succeed (Bandura, 2004). Aspects of the

exercise environment, notably the exercise provider and their leadership, can influence an individual's perception of efficacy (Beauchamp, Welch, & Hulley, 2007).

An environment can be socially enriched by factors such as reinforcement for positive behaviour, encouragement and feedback. These can arise from the facilitator or other participants in the exercise environment. It has been shown that in a socially enriched environment self-efficacy significantly increased (Turner, Rejeski, & Brawley, 1997). This suggests that elements of the environment have the potential to influence perceptions of personal capabilities.

The social environment and self-efficacy have also been demonstrated to influence social physique anxiety, the anxiety experienced when one perceives others to be negatively evaluating one's physique (Hart, Leary, & Rejeski, 1989). It has been shown that participants with higher levels of social physique anxiety preferred exercise settings and clothing that de-emphasised the physique (Krane, Waldron, Stiles-ShIPLEY, & Michalenok, 2001). Issues related to self-efficacy and anxiety within an exercise setting can be closely related to how the individual views themselves in comparison to others.

The Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) are concerned with how individuals make sense of social situations and these models are designed to aid understanding of the correlates of health behaviour (Connor & Norman, 2005). Both the TRA and TPB have been applied to the prediction of a number of different health-relevant behaviours with varying degrees of success (Hardeman et al., 2002). Participation in a range of exercise behaviours has been studied using the TRA (Theodorakis, Doganis, Bagiatis, & Gouthas, 1991). The application of the theory of planned behaviour to exercise demonstrated that intentions were based both upon attitudes and perceived behavioural control, but not subjective norms while actual behaviour seemed to be principally determined by intentions (Dzewaltowski, Noble, & Shaw, 1990).

The Health Belief Model (HBM) is one of the most established social cognition models. The HBM uses two aspects of individuals' representations of health behaviour in response to threat or illness. These are the perception of illness threat and evaluation of behaviours to counteract this threat (Connor & Norman, 2005). The HBM has been considered more a loose association of variables that have been found to predict behaviour than a formal model (Conner, 1993).

It has been suggested that health behaviour change research has concentrated excessively on social cognition models, particularly as their practical value has been questioned (Jeffery, 2005). Other models such as stage theories and the self-determination theory may therefore provide added insight into behaviour change.

2.2.3: Behaviour change

Behaviour change is the primary aim of physical activity interventions and is therefore crucial to an interventions success. The principles involved in behaviour change need to be explored to fully understand the process involved in an action, such as taking up physical activity. There are an abundance of models and theories that attempt to explain the mechanisms behind how and why people change. There is no single theory to explain how best to assist an individual in adopting physical activity for life (Marcus & Forsyth, 2003). As a result the research literature relating to physical activity behaviour change integrates a range of models and theories that may contribute to the success of an intervention.

One frequently cited model which has addressed issues related to behaviour change is the transtheoretical model. This model conceptualises behaviour change as a process that unfolds over time and involves progression through a series of stages (Prochaska & DiClemente, 1982). Research has described the process involved in eliciting and maintaining change (Prochaska & DiClemente, 1982). This model explains how there is progression through six stages: precontemplation, contemplation, preparation, action,

maintenance and termination. The model is also made up of four dimensions which contribute to explain the processes involved in behaviour change and how they affect different types of outcomes (Biddle & Mutrie, 2008). The four dimensions are: the stages of change, the process of change, self-efficacy and decisional balance. This model has been applied to interventions to promote physical activity behaviour change (Kim, Hwang, & Yoo, 2004).

Prochaska and Diclemente further suggest that behaviour change occurs in a cyclical process that involves both progress and periodic relapse. Even with successful behaviour change, people are likely to move back and forth between the first five stages, experiencing one or more periods of relapse to earlier stages. Prochaska and DiClemente (1992) also suggest that behaviour change can only take place in the context of an enabling or supportive environment. An insight offered by this theory, is the emphasis that can be placed on matching interventions to the stage of readiness of an individual patient. This approach provides a framework for understanding and examining individual differences in motivation for and involvement in exercise referral schemes.

Within physical activity research provides evidence that the transtheoretical model is a commonly adopted framework (Marcus & Forsyth, 2003; Marshall & Biddle, 2001). This model is used by health professionals who are interested in promoting physical activity to their clients, with suggestions for different types of intervention for patients at the different stages.

The transtheoretical model can result in higher retention rates. Traditional interventions often encounter high dropout rates. Participants find that there is an incongruity between their needs and readiness and the intervention programme. Since the programme is not fitting their needs, they are likely to dropout. The transtheoretical model is designed to create interventions that are matched to the specific needs of the individual (Velicer, Prochaska, Fava, Norman, & Redding, 1998). Despite this the transtheoretical model has been criticised as it purely focuses on personal motivation for behaviour change and does not take into account external factors and social factors, such as gender, socioeconomic

position and age which can influence exercise behaviour (Adams & White, 2005; C Gidlow et al., 2008; James et al., 2008).

While the transtheoretical model is a popular framework for the development of exercise interventions, inconsistencies regarding the implementation of interventions based on the model have been observed. In order to draw a more definite conclusion about the efficacy of this model and other theoretical models based approaches, the precise nature of the intervention needs to be more fully explained within the study protocol (L. Johnston, Breckon, & Hutchison, in press).

2.2.4: Self determination theory

Motivation is an important component of behaviour change and impacts upon an individual's health behaviour and therefore their accomplishment within an intervention. One dominant theory regarding motivation is the self determination theory (SDT). SDT proposes that all behaviours can be understood as lying along a continuum ranging from external regulation to autonomy, theory suggests that individuals pursue self-determined goals to satisfy the basic needs of autonomy, competence and relatedness (Hagger & Chatzisarantis, 2007). Autonomy, competence and relatedness are considered essential to motivation (Ryan, 1995). The need for autonomy reflects the desire of individuals to be the origin or source of their own behaviour and is experienced when individuals perceive their behaviour as self-endorsed (Ryan & La Guardia, 2000). SDT hypothesizes a variety of consequences associated with more controlled versus autonomous behavioural regulation, including effort, persistence, the quality of functioning and of the subjective experience (Ryan & Deci, 2000).

The need for competence refers a person's inclination to interact effectively with the environment and to experience opportunities to exercise and express their capabilities (Ryan & La Guardia, 2000). The need for relatedness refers to feeling connected with significant others, cared for or that one belongs in a given social setting. Factors in the social environment that fulfil the needs for autonomy, competence and relatedness will

facilitate intrinsic motivation. It has been recognised that differences in the degree to which the three needs are supported between domains may lead to differences in integration for the individual (Ryan, 1995). If the social environment provides nurturance of perceptions of competence, autonomy and relatedness, the person will move toward integration and a unified sense of self and develop the personal resources for engaging in adaptive and autonomous self- regulation of behaviour (Deci & Ryan, 2000). Competence is facilitated when individuals are helped to develop clear and realistic expectations about what behaviour change could do for them. A supportive environment considers the quality of the relationships between individuals (Reeve, 2002).

The construct of intrinsic motivation describes the natural inclination toward assimilation, mastery, spontaneous interest and exploration that is critical. The theory suggest that individuals pursue intrinsically motivated goals to satisfy their psychological needs, such as to independently solve problems, interact socially and master tasks (Hagger & Chatzisarantis, 2007) Maintenance and enhancement of intrinsic motivation requires supportive conditions, as it can be fairly readily disrupted by various non-supportive conditions (Ryan & Deci, 2000).

The more autonomously regulated the behaviour (along the continuum) the more stable, done with greater care and accompanied by more positive outcomes the behaviour will be (Ryan & Deci, 2000). Wilson and Rodgers (2004) found that perceived autonomy support from friends supported the tendency to endorse more autonomous exercise regulations which, is then more strongly associated with behavioural intentions. Furthermore, research has supported that the more autonomous the motivations for change the greater the treatment adherence, long term maintenance of change and positive outcomes (G. Williams, McGregor, Zeldman, Freedman, & Deci, 2004; Zeldman, Ryan, & Fiscella, 2004)

2.2.5: Perceptions, attitudes and behaviour

When attempting to comprehend principles associated with behaviour change and patients' motivation, an understanding of the complex interaction between attitudes, perceptions, knowledge and behaviour is advantageous. In order to understand the relationship, the concepts need to be defined and explored. When attempting to provide a conceptualisation of success, it is beneficial to be aware of the incorporation of these notions.

Perceptions are seen as a way of conceiving something, or contriving an idea or explanation and formulating it mentally. Perception is an active searching for the best interpretation of the available data, perception involves going beyond the immediately given evidence of the senses (R. L. Gregory, 1966). From this definition it can be seen that perceptions involves interpretation, therefore this allows for different perceptions between individuals presented with the same information.

There are a variety of definitions for what an attitude is, however most appear to centre on the idea that it includes measuring issues along a dimension ranging from positive to negative. This measurement has two components cognitive (thought processing) and affective (values and beliefs). The beliefs and values are combined with the cognitive component. Thus the affective and cognitive component gives a persistent measurement for dealing with the world (Bootzin, Loftus, & Zajonc, 1983). Attitudes however change with various events in a person's life. Values are one of the components of attitudes, they are ideas about the worth or importance of concepts, they come from personal beliefs. Values help to determine how we will act as they help us to weigh the importance of various alternatives. Beliefs however are assumptions or convictions that are held to be true regarding people or concepts. Beliefs and values guide the actions of individuals and groups. The cognitive system interprets aspects of personal experiences and the meanings of beliefs. At times affective reactions to the environment can influence thinking processes during decision making. At other times the cognitive system influences affective responses (Brooks & Lindenfeld, 1999).

Hogg and Vaughan (1995) describe attitudes as basic and pervasive in human life. They state that without the concept of attitude, we would have difficulty construing and reacting to events, trying to make decisions and making sense of relationships with people in everyday life. Attitudes are embedded and influenced by social interactions.

Attitudes are seen to be only one determinant of behaviour, they represent predispositions to behaviour but how we actually act in a certain situation depends on the instant consequences of our behaviour, how we think others will evaluate our actions and customary ways of behaving in similar kinds of situations.

Knowledge is another concept to interact with perceptions and attitudes. Knowledge is also known to influence actions and behaviour. The role of knowledge in generating appropriate actions is that it acts as a backdrop for possible courses of action, for deciding if courses of action will produce the intended result and for using judgement in selecting between them, also for deciding how actions should be acted on (Achterbergh & Vriens, 2002). Knowledge can change someone as it can become grounds for action or by making an individual capable of different or more effective action (Davenport & Prusak, 1998).

The power of knowledge to organise, select and judge comes from values and beliefs as well as from the available information and logic (Davenport & Prusak, 1998). An increase in knowledge regarding a subject may not have a direct influence on behaviour it is what people believe and the values they hold which may in fact result in behaviour change. The relationship between knowledge and behaviour is a complex one. Health education campaigns often assume that improving knowledge will change attitudes and therefore change behaviour (Israel et al., 1995) However, an accompanied change in values may in fact help to influence behaviour.

When attempting to assess someone's perceptions and attitudes in an effort to understand behaviour it is essential to explore all accompanying aspects. Beliefs, values and the influence of others and the environment all contribute to a person's perception of an

issue. It is important to be aware of these concepts in order to obtain a more complete and compelling understanding of peoples' perceptions of their experiences.

2.2.6: Social comparison theory

Festinger's (1954) social comparison theory (SCT) provides an insight into the some of the social processes involved in a social pursuit, such as a physical activity intervention and provides an understanding into the influence of social comparisons. SCT proclaims that individuals have a drive to evaluate their opinions and abilities and in the absence of objective, nonsocial criteria, people take part in social comparison (i.e., they compare their opinions and abilities to those of other individuals), furthermore, whenever possible, social comparisons are made amongst similar others.

Since its original formulation, SCT has undergone a number of revisions. It has been now recognised that spontaneous comparisons may occur, and that the referent point used in the comparison may in fact be an individual dissimilar to oneself (M. Martin & Kennedy, 1993). Social comparison can also happen on dimensions such as physical appearance and eating habits (Wheeler & Miyake, 1992). The consequences of the comparison process seem to be influenced by the direction of the comparison (e.g., whether it is upward or downward). Downward comparison (i.e., comparing yourself to someone worse off on the dimension of interest) is believed to enhance subjective well-being, whereas upward comparison (i.e., comparing yourself to someone who is better off on the dimension of interest) is believed to reduce well-being (R. H. Smith, 2000). Furthermore distant sources of influence such as media (magazines and posters) are perceived as eliciting greater stress to conform to idealistic standards of attractiveness than the more personal sources such as friends and family (Irving, 1990).

2.6: Measures used for evaluation

This section addresses the various measures and assessments captured by schemes. It highlights both the similar and different outcomes that are captured from ERS. Thus the following discussion presents a comparative review and considers the similarities and difference between how success is presented in recent published research in this area. The National Quality Assurance Framework (NQAF) (Department of Health, 2001a) recommends that there should be an agreement on appropriate expected outcomes from the schemes and appropriate assessments should be made at the beginning and end of a referral programme with accompanying data collection. The importance of stakeholders perception of outcomes has been acknowledged by previous research (El Ansari, 2003). Despite these recommendations the variability between scheme structure and assessment is evident from an assessment of the outcomes used in previous research. This section aims to highlight that even though recommended guidelines have been put in place, thus beginning the process of standardisation, the development and evaluation of schemes even post the NQAF contains a variety of different methods of assessment.

Exercise referral scheme outcomes have been the subject of a number of reviews at a time when schemes were becoming prevalent. One such review concentrated on physical activity outcomes (Riddoch et al., 1998). This found that small but positive short-term changes became less clear as experimental rigor increased and suggested that there should be more methodologically robust evaluations. An earlier review investigated the nature of schemes based on the data that was routinely collected (K. Fox, Biddle, Edmunds, Bowler, & Killoran, 1997). The authors criticised the quality of the evaluations and questioned the potential public health impact of ERS because of the small proportion of the population that could be reached by such schemes. Since these earlier reviews there has been a surge of more recent papers in this area, incorporating different measures of success. One more recent review concentrated solely on attendance and concluded that ERS are very high in attrition with approximately eighty per cent of participants who take up referral, dropping out before the programme ends (C. Gidlow et

al., 2004). One review began to highlight the need for process evaluation to be incorporated and reported in the literature (Dugdill et al., 2005). A systematic review stated that the comparison of interventions was complicated by different methods of measuring concepts and different definitions used. This review concluded that the amount of solid evidence was still rather limited (Sorensen et al., 2006). It is evident that there is a variety of measures used to evaluate schemes, which contribute to the understanding of effectiveness of an intervention. Reviews to date have begun to highlight the impact of schemes, however the evidence seems inconsistent. The impact of the schemes appears to not have been adequately determined, due to the discrepancies in how success and effectiveness are assessed.

In order to appreciate the current understanding of success and effectiveness a search of major databases was conducted. This identified studies investigating ERS interventions that were based in primary care in the UK and were published in peer-reviewed journals.

Major databases searched included Pub Med, Sports Discuss, Psych Info. Table 2.1, outlines search terms used and results. This literature search was conducted during October 2007.

Table 2.1

Search Terms and Databases

<i>Search terms</i>	<i>Pubmed (MeSH: major,no exploded terms)</i>	<i>Psyarticles, psychINFO, Sportdiscus (title)</i>	<i>No. of articles</i>
Exercise on prescription	x		25
Exercise on prescription		x	15
Exercise referral	x		11
Exercise referral		x	10
Physical activity referral	x		0
Physical activity referral		x	1

Five main inclusion criteria were employed in order to access the most relevant and up to date information:

1. Studies were based in the UK
2. Interventions were based in primary care
3. Interventions involved referral to exercise
4. Studies were published in peer-reviewed journals
5. Studies post NQAF

By delimiting the review and discussion to studies in the UK any international differences were avoided (e.g. differences between health care systems). The inclusion of only published studies imposed a degree of quality assurance.

The limitations of this inclusion criteria and search method are however acknowledged. Due to the search attempting to capture quantitative and qualitative sources together, the search terms used may have benefited from a wider range of associated terms to be confident that the available research is being accessed. Literature not identified in electronic searches was sourced through individuals who were likely to have knowledge in this area, such as active researchers. Obtaining a complete exhaustive list of all research in the area of exercise referral encompassing both quantitative and qualitative resources is however a challenge due to the breadth of the subject and its associations to many different fields and therefore journals and resources. Whether conventional review methodology is appropriate for the incorporation of qualitative research is an important empirical and epistemological question (Dixon-woods et al., 2006). Current methodological development has been inclined to focus on different elements of systematic review methodology, rather than on the whole. For example, methods for searching for qualitative research has been looked into (Lloyd Jones, 2004) along side issues relating to the appraisal of qualitative research (Eakin & Mykhalovskiy, 2003) and

furthermore the methods for synthesis (Dixon-Woods et al., 2005). Many published syntheses of qualitative research have focused on qualitative research only, and specifically exclude synthesis of qualitative and quantitative evidence (Paterson, Thorne, Canam, & Jillings, 2001). It is questionable whether the template offered by conventional review methodology can comfortably accommodate qualitative research. Qualitative research appears to remain somewhat elusive, reflecting perhaps in part the shortcomings of the indexing of qualitative articles. Furthermore the debate about what actually constitutes qualitative research may hinder development within this area. For example, concerns surrounding the type of data (for example, whether open-ended questions on a survey should be deemed to be qualitative) and concerns as to whether specific techniques qualified as qualitative (for example whether content analysis is a qualitative research strategy) may provide reasons for the lack of unity this area. The issue of what counts as qualitative research and how it can be identified is therefore not simply a technical matter but it is also an epistemological one that requires further debate (Dixon-woods et al., 2006).

Table 2.2
Studies that have employed Quantitative Outcomes

Authors	Year	Type of Study	Sample	Duration	Primary outcome measures	Findings- examples
1. Taylor and Fox	2005	RCT	142 adults	10 weeks	Physical self-perceptions (PSPP)	Exercise group significantly ($p < .05$) more positive about physical self-worth, physical condition, and physical health (but not their physical appearance) than did the control group
					BP	4 mm Hg systolic significant reduction ($p < 0.05$)
					BMI	2.7% reduction in high adherers
					Skinfold	10.3% reduction in high adherers
					Waist-hip ratio	No sign. difference
					Physical activity (7-day recall)	20% increase from start to end of scheme
					Adherence	41% completed
					Adherence self report (intensity, duration)	Too subjective and incomplete to use
2. Harrison, Roberts and Elton	2004	RCT	545	10-12 week	Physical activity (7-day recall)	5.9 bpm reduction
						12 months, no sign difference between groups
3. Grant, Todd,	2004	ERS/RCT	26	12 week	BMI	0.59 reduction

Aitchison, Kelly and Stoddart					women 55-70	Skinfold	Increase 0.4
						BP (mmHg)	SBP 17.1 reduction DBP 5.8
						Blood cholesterol (mmol)	8.6% decrease (ns)
						Functional status; chair rise, timed up and go, 20m walk, lifting bag on shelf, stair walking, sit and reach.	Failed to show sign. Improvement when comparing e and c groups
						Life satisfaction index	Sign higher score for ex than c group
						Physical self-perception profile	No diff in changes between exercisers and controls.
4.Harrison, McNair Dugdill	2005	ERS	6610	12 weeks	Attendance	79% attended first appointment	
5.Issac, Critchley, See Tai, Buckingham, Westley, Harridge, Smith, Gottlieb	2007	ERS	943	10 weeks	Physical activity level	Ps achieving 150 mins increase 13.8%	
						Blood pressure	Sign. decrease
						Cholesterol	Small reductions
						Cardiorespiratory fitness	Sign. improvement
						Strength and power	Sign. improvement
						Anxiety and depression	Showed improvement
6.Gidlow, Johnston, Crone, Morris, Smith, Foster, James	2007	ERS	3568	10-12 weeks	Attendance	Uptake- 65% Completion- 31.1%	

Table 2.3
Studies that have employed Qualitative Approaches

Authors	Year	Type of Study	Sample	Duration	Measure	Themes/findings- examples
7.Hardcastle and Taylor	2001	ERS	15 women 50-80 years old	10 week	Unstructured interviews and life story techniques	Meanings of exercise: Informal networks and processes of referral, perceptions of control and accountability, sources of beliefs, life stages and support networks, social support in the gym, ageism and social norms.
8.Wormald and Ingle	2004	ERS	30 adults		Focus groups	Role of PHC staff The exercise programme, environment and staff Perceived effects of the scheme
9.Stathi, McKenna and Fox	2004	ERS	13		Semi-structured interviews	Improvement through participation – functional features, mental health outcomes
10.Crone, Smith Gough	2005	ERS	18		Focus groups/interviews	Sense of belonging, sense of purpose, physical health

The studies included reported various quantitative outcome measures. Studies 2 ,4 and 6 reported one outcome measure of either physical activity or attendance . Studies 1, 3 and 5 reported a number of different measures. The common measure between these studies was Blood Pressure (BP).

Four studies reported qualitative findings. These were mostly obtained through the use of interview techniques and focus groups (studies 8,9,10). Study 7 used qualitative techniques such as unstructured interviews and life story techniques; this produced themes such as informal networks, perceptions of control, support networks, social support in the gym and social norms.

When attempting to compare the studies it became evident that, although there were apparent similarities in the type of outcome measures collected, often the lack of detail reported made direct comparison difficult. Those involved in schemes must recognise the importance of routinely collecting accurate and adequate data to enable quality evaluations (Webb, 1999).

In order to fully understand the concept of success, how success is currently being measured and discussed in the literature is an important consideration. All types of literature have been considered, not just the empirical controlled studies. Thus qualitative papers are included, as they contain much of interest in developing understanding.

2.6.1: Measurement quality

Quantitative scheme evaluations can be broadly broken down into controlled/experimental trials and uncontrolled cohort studies. Fundamental differences between controlled and uncontrolled methods relate to differences in validity. Controlled experimental research strives to maximise internal validity, controlling for the effects of confounding variables by using strict experimental controls (Rothwell, 2005). Although this permits the detection of intervention effects, it can often be at the expense of ecological validity and therefore the research setting does not replicate practice (Rothwell, 2005). Uncontrolled research in the context of exercise referral, often happens within “real-life” practice settings, can provide context-specific evidence and facilitating the application of findings to practice (C Gidlow et al., 2008). Results from uncontrolled research can reflect a typical scheme population rather than one that has been selected for the experiment. The balance between internal and external validities is challenging because one is often accomplished at the expense of the other. Methods and data collection procedures must have the rigor necessary to produce data of adequate quality, but unless the experimental setting can replicate practice, the extent to which findings can meaningfully inform practice maybe questionable (C Gidlow et al., 2008).

2.6.2: Quantitative measures

Attendance

Schemes often measure attendance as an outcome variable (study 1,4,6); this is sometimes reported in terms of adherence or completion. Although attendance can be measured objectively, this is not always the case. The classification of attendance and how it is reported is also not standardised. In study 1 (A. H. Taylor & Fox, 2005) high adherers were those attending 15 to 20 sessions whereas others studies are less stringent and may report attendance at the final assessment to be successful attendance. This assumes that all those present at final assessments have attended regularly and equally throughout. However attendance is a useful outcome as beneficial changes are shown to occur if attendance is adequate (Blair, Cheng, & Holder, 2001). It is evident that what constitutes adequate in this instance is still debatable. It is pertinent to measure attendance in schemes due to known benefits.

Furthermore, it is one outcome which is measured by many schemes, and can be measured objectively, therefore allowing comparison between schemes. However, attendance cannot provide a complete picture of success; there are a number of other ways effectiveness and achievement can be assessed in order to enrich the emerging picture.

Physical Activity

Much of the existing research about effectiveness has employed quantitative methods about physical activity behaviour (Dugdill et al., 2005; Riddoch et al., 1998). The quantification of physical activity is particularly difficult and these methods may fail to detect the real impact of the scheme. Physical activity is difficult to measure consistently across studies and populations. The most common way of measuring physical activity is by using a 7- day recall method, therefore relying on the participant to accurately detail their physical activity (LaMonte & Ainsworth, 2001). Reliable and valid measures are needed for the possible range of physical activity. Existing measures are better for vigorous activity than for moderate or light activity. Sedentary individuals are more likely to begin activity at a light level, and this activity is often not captured by current measurement techniques. Increased consensus about what are the best measures for physical activity would assist comparability between studies and would enable assessment of success (Harrison, Roberts, & Elton, 2004). Studies 1,2 and 5 captured self-report data regarding the physical activity levels of participants, which mixed results (see Table 2.2)

Blood Pressure

Blood pressure (BP) is considered an objective accurate measure that may indicate health improvement without weight loss. Systolic and diastolic blood pressure can decrease by 6 to 10 mm Hg with aerobic exercise training in previously sedentary men and women regardless of age (McArdle, Katch, & Katch, 2001). A decline in blood pressure is considered a positive step in reducing the risk of coronary heart disease (Department of Health, 2000a). Following the first two to three hours after exercise, blood pressure drops below pre-exercise resting levels, a phenomenon referred to as post-exercise hypotension (Isea et al., 1994). Therefore the test may detect a false positive if the time the BP is taken is not monitored carefully. Therefore,

blood pressure provides a useful indication of success, yet it is not infallible to discrepancies, and requires a level of expertise to minimise inconsistency. Nevertheless, BP is a measure often employed in ERS, as it is considered quick and easy to collect and compare (studies 1,3 and 5). It can be seen from table 2.2 that a reduction is evident from an ERS with study 3 reporting a 17.1 reduction in systolic BP and 5.8 reduction in diastolic BP.

Body Mass Index

The Body Mass Index (BMI) fails to consider the body's proportional composition or fat distribution. A high BMI could lead to an incorrect interpretation of over-fatness in lean individuals with excessive muscle mass because of exercise training. ERS schemes however target sedentary individuals where this is expected to not be the case. Despite the limitations, BMI has shown an association with mortality in several cohort studies (J.E Manson et al., 1995; Willett et al., 1995). BMI is widely used in the evaluations of ERS partly because of its ease of collection, as it simply requires height and weight to be taken. It can be seen from table 2.2 that in the studies captured within the review reductions are evident ranging from a 0.59 (study 3) to 2.7 (study 1).

Blood Cholesterol

The relationships of physical activity to blood lipid and lipoprotein levels in men and women have been studied extensively (Durstine & Haskell, 1994; Stefanick & Wood, 1994). Of more than 60 studies of men and women, approximately half found that exercise training is associated with an increase in high-density lipoproteins (HDLs). Favorable alterations in blood cholesterol occur for sedentary men and women of all ages who engage in regular moderate to vigorous aerobic exercise (A. L. Dunn, 1999). However taking blood cholesterol with a pin prick test may not be practical. The equipment to then test the sample may also not be readily available in the gym/leisure environment, where these schemes are often provided. Subsequently only one of the studies collected this type of data (study 3), showing an insignificant reduction of 8.6%.

Skin fold

Skin fold measurements provide fairly consistent and meaningful information about body fat and its distribution (McArdle et al., 2001). The sum of skin fold can reflect body fat changes following an intervention. The person taking skin fold measurements must develop expertise with the proper technique, to minimise measurement error. Measurement discrepancies can be encountered leading to concern that the amount of subcutaneous fat measured may not be a representative value in some instances (S. Grant, Todd, Aitchison, Kelly, & Stoddart, 2004). These observations are supported by previous research which highlights that it may not be possible to gain a representative skin-fold site in very overweight people (Garrow, 1988). Skin fold is not used in all studies. Table 2.2 shows two results (study 1 and 3). Study 1 showed a 10.3% reduction, whereas study 3 showed a slight increase (0.4%). This begins to question the effectiveness of the measure when compared to the other changes evident from this research (study 3). The participants in ERS may find skinfold testing intrusive as it involves taking measurements at a number of sites on the body.

Waist- hip ratio

Ratios of waist hip girth that exceed 0.80 for women and 0.95 for men relate to increased risk of death, even after adjusting for BMI (Folsom, 1993; Rexrode, 1998). Waist –hip ratio has been shown to be a strong predictor of CHD risk (Rimm et al., 1995). Central fat deposition, independent of fat storage in other anatomic areas, reflects an altered metabolic profile. Often waist girth is measured before and during weight loss as a simple gauge of abdominal obesity and to complement information on body fat (McArdle et al., 2001). It could be suggested that a simple waist measurement maybe a useful indication of improvement from an intervention. However this is not a measure that is collected in most of the ERS considered. Study 1 was the only study that collected this data; the results showed no significant differences for this outcome (see Table 2.2).

In addition to these more routinely collected measures, other data such as functional status and fitness are assessed in ERS. Although these outcomes help to assemble a

picture of improvement, the lack of consistency between schemes makes the comparison and appraisal problematic.

2.6.3: Qualitative outcomes

Results from qualitative methods yielded a wide variety of concepts, with some comparable in nature. Study 8 contained a theme termed the role of the primary health care staff. This is comparable to some of the ideas from study 7, where dimensions emerged such as informal networks and processes of referral, perceptions of control and accountability and sources of beliefs regarding exercise. These outcomes from both study 7 and 8 address how participants heard about the scheme demonstrating how informal methods such as friends make them aware of the scheme. In both studies it is also noted that GPs did not always have a complete knowledge of the scheme and did not always fully explain the benefits of physical activity for health.

There are similarities between the themes that emerged from study 8 (the exercise programme, environment and staff) and a theme in study 7 (social support in the gym environment). Both these themes highlight the importance of the instruction and interpersonal skills of the exercise providers. The studies indicate that both the support and supervision offered by the exercise leader are crucial in maintaining motivation and adherence. This is considered to be particularly influential at the early stage of exercise adoption.

Study 10 demonstrated some prominent benefits of the scheme for the participants. Participants reported increased self-confidence and wellbeing. Evident also from the findings were consequences that were experienced by participants. These included the sense of achievement and satisfaction gained from taking part in the scheme. Perceptions of the health and fitness benefits were also evident in the findings, increased levels of flexibility, aerobic fitness and strength were mentioned by the participants.

In practice the outcomes that are assessed are often dictated by time, resources and expertise of those providing the scheme. Therefore often a compromise is made

between what is accurate and ideal and what is possible for the operational scheme in practice.

It can be seen from the findings from the qualitative research discussed that this approach helps to demonstrate the wide range of outcomes and processes that are considered important. Participants' experiences have partially been overlooked when the outcomes of ERS have previously been examined. The importance of the patients' perspectives is beginning to be championed within the literature for example in Crone et al a (Crone et al., 2005; 2005). Considering the current focus on patient consultation in the NHS and the need for a more patient-centred approach to evaluating schemes there is a need to determine participants' perceptions of the schemes with a view to improving them in order to provide a better service in the future.

It is evident that there are a number of ways in which the success and progress of schemes and the participants' experiences can be assessed. There is a need for research to incorporate a broad measurement of quality experience and health outcomes from the perspective of all parties involved, utilising both quantitative and qualitative indicators (Dugdill et al., 2005). Complex physical activity interventions may require a mixed-method approach to capture the range of data (C Gidlow et al., 2008). The differing approaches to the evaluation of ERS means there are many ways in which success is depicted in the literature. In order for comparison across schemes to be effective the choice of measures and assessments, in the future, may need to be standardised. To ensure the depth and breadth of an interventions success is encapsulated it is vital that the concept of success is unpacked. Only with this insight into how success is perceived can the measurement of success become effectual.

2.7: Summary of Literature Review

In summary, the literature review has highlighted the continued and increasing need for a physically active lifestyle to be embraced by the population. The importance of this for the prevention and treatment of numerous conditions and for enhancing well-being has been revealed. Within policy and intervention development it is evident that there is a clear intention to promote better public health. Uncertainty however appears to remain over the necessary methods needed to achieve this.

The review exposed the increasing recognition that qualitative methods are needed to complement quantitative methods as a means of examining issues relating to how interventions work. The assessment and research of exercise referral interventions therefore should incorporate qualitative, as well as quantitative measures to gather the necessary evidence to inform future practice.

An overview of theories and perspectives relating to physical activity and exercise behaviour has provided context for the explanation and understanding of exercise referral schemes and the success people can achieve from them. An inspection of literature regarding population and community groups, has highlighted the potential differing demands and requirements. In order to determine if these have an influence on scheme outcomes, this thesis distinguishes between sections of the community to provide further insight (see Chapters 7 and 8). Based on the findings, the option to tailor schemes and provide support mechanisms where necessary, could then improve the efficiency of future practice.

In order for future research to report and compare the impact of interventions it is vital to unpack the concept of success. Those involved in the provision and those who take part in schemes may perceive and value different markers of success. To obtain a holistic view of the worth and impact of such schemes on people and communities these opinions are critical.

The current research therefore endeavours to understand ERS success in its entirety, within an applied setting. A research design is used that recognises the complexity of the ERS experience and embraces a holistic approach. An uncontrolled population

cohort method is used within a functioning ERS. This ecologically valid method can provide context specific evidence and facilitate the application of the findings to future practice.

This study is a unique enquiry as an in-depth exploration of the concept of success in an existing exercise referral scheme has not to date been attempted. It is distinctive not only in its focus, but also in the comprehensive and rigorous use of mixed methods. The integration of quantitative and qualitative methods in an equal, complementary manner to explore the concept of success in such a rigorous approach will provide further evidence regarding the role and value of ERSs for public health in the United Kingdom.

Chapter 3: Contextual Chapter

3.1: Greenwich borough

This section provides background and contextualisation of the scheme in which the research is situated. It details the area the scheme is based in, the scheme's organisation, the participant's journey through the scheme and the scheme's aims. Observation of the scheme provides a descriptive context to enhance understanding of the later qualitative and quantitative findings.

Greenwich is a diverse region. In comparison to England as a whole there are higher percentages of ethnic minorities in this borough of London.

Table 3.1

Ethnic comparison of Greenwich and England¹

<i>Ethnicity</i>	<i>Greenwich %</i>	<i>England %</i>
White	74.9	89.5
Asian	7.2	5.1
Black	12.2	2.6
Chinese	2.7	1.2
Mixed	2.9	1.5

Unemployment is also higher in the Greenwich borough; 5.4% recorded as unemployed compared to 3.4% as a national average. The area of Woolwich within Greenwich where the scheme is predominantly based has an unemployment percentage of 9.2, which is considerably higher than the national average.

The life expectancy within the area provides some indication of the deprived health of the borough. The male life expectancy within Greenwich is 74.5 years compared to

¹ *Note: all statistics provided by National Neighbourhood Statistics: Office for National Statistics*

the national average of 76.5 years. The female life expectancy is also slightly lower than the national average of 80.9 years, as the Greenwich borough is listed as 80.1

3.2: Healthwise Scheme

Healthwise is a Physical Activity Referral Scheme (PARS), where Health Professionals refer patients to a low cost physical activity programme. It was designed for individuals with existing health conditions, such as depression and hypertension, as well as those at risk of developing health conditions, such as diabetes and coronary heart disease.

Healthwise is a partnership project between Greenwich Leisure Limited (GLL), Greenwich Teaching Primary Care Trust (GTPCT) and Greenwich Council. Single Regeneration Budget funding was secured for the development of a PARS across GLL leisure centres in the London Borough of Greenwich. The scheme commenced in January 2005 and the most recent data collected for the present study was March 2007.

Patients enter the scheme by either approaching, or are approached by medical staff who discuss the scheme and the benefits of physical activity. The patient is then referred onto the scheme of which there are five leisure centres involved. The scheme providers make contact with the patients directly via the telephone, and patients are given an initial consultation by the staff to assess their individual needs. A subsequent programme of physical activity is drawn up, agreed and patients sign up to the scheme for a reduced fee (see Figure 3.1 for a flow diagram of how the scheme works).

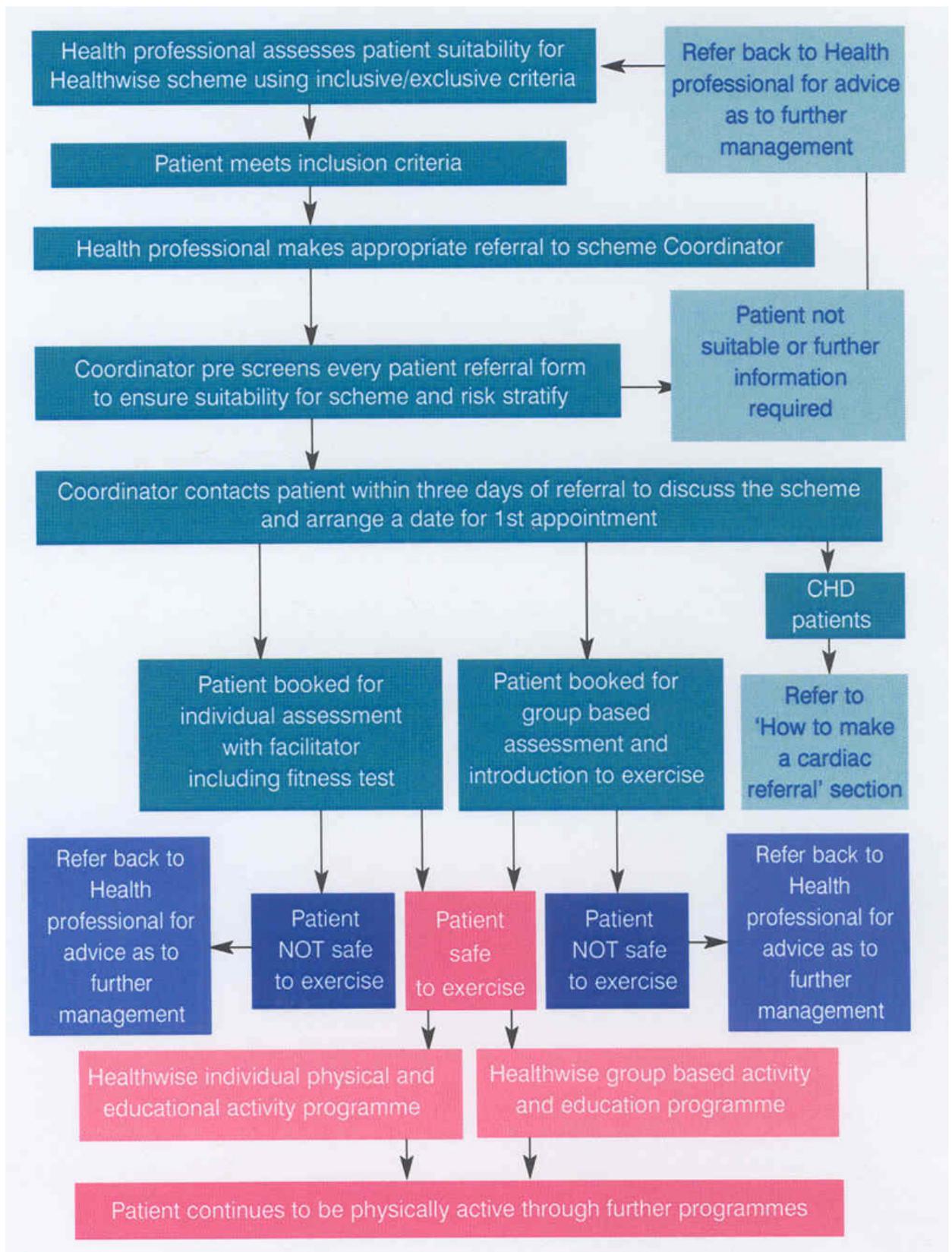


Figure 3.1: Scheme process (page extracted from Healthwise information booklet)

The facilities available involve a mixture of gym equipment, studios for group exercise and swimming pools. These are available at five leisure centre in the Greenwich borough.

The programme has been developed using the best available understanding and models of good practice for encouraging uptake of exercise, linking health professionals and leisure providers (Mills, Crone, & El Ansari, In press). The scheme allows those patients who meet the inclusion criteria to be referred (inclusion criteria can be found in Appendix A). Following referral, the scheme duration is up to 26 weeks where patients are given support and advice. After completion, patients undergo a post scheme assessment where discussion about continuing their physical activity takes place.

3.2.1: Healthwise Aims

The main aim of the Greenwich Physical Activity Strategy is to ensure that affordable, accessible opportunities are provided for people to become more physically active to improve the health and well being of the population and reduce health inequalities. Its main target groups include:

- People with specific health conditions who can benefit from exercise (e.g.: people with existing heart disease, diabetes, obesity, respiratory conditions, mental health problems, etc.)
- Those at greatest risk of developing specific health problems where these risks can be reduced through being more physically active (including black and minority ethnic communities with increased susceptibility to particular health conditions).
- Communities with financial and/or cultural barriers to accessing existing services (including people on low income, people who haven't got experience of using mainstream leisure facilities or feel uncomfortable in them).

Healthwise also aims to develop a model of best practice for running a physical activity referral scheme.

3.2.2: Scheme Evaluation

The National Quality Assurance Framework (NQAF) highlights the need for rigorous evaluation of PARS and of the benefit of partnership working to ensure effectiveness (Department of Health, 2001a). The evaluation of the scheme was undertaken by the University of Gloucestershire; the current author was employed in the capacity of an evaluator and as a consultant, in combination with other members of the evaluation team. The evaluation functioned as action research, therefore informative feedback was provided by the University of Gloucestershire to the scheme coordinators, in an attempt to provide best practice guidance and to ensure the scheme was continually developed. Feedback was provided on a quarterly basis for discussion, providing interim conclusions and recommendations regarding the schemes progress, which the providers were able to act upon where appropriate. This action research approach has been advocated in order to encourage improvement and for real world issues to be addressed (Coghlan & Brannick, 2001).

The evaluation aimed to provide a comprehensive insight into the effectiveness and processes involved. The adoption of a mixed methods approach, incorporating both quantitative measures (for example, attendance, blood pressure, body weight) and a qualitative component that allow the voices of the patients, exercise providers (facilitators) and health professionals to be considered, was deemed to be informative (Mills et al., In press).

In the capacity as a consultant, the importance of motivational interviewing as a technique to support behaviour change was highlighted. As a consequence it was suggested that facilitators received training in motivation interviewing (a two day course) and the fundamentals of behaviour change in an attempt to improve the patients' motivation and commitment to the scheme. Suggestions were also made regarding changes to the literature used when enrolling patients onto the scheme, during the first consultation, which had been identified by a review of the documents by the University of Gloucestershire team. Basic tools and principles of motivational

interviewing were incorporated into the literature used by facilitators when dealing with patients, in an attempt to encourage the use of the suggested behaviour change principles. The extent to which these principles were actually incorporated within practice was later questioned by the evaluation. The restriction of time, resources and staff meant that the facilitators could not fully embrace all aspects of motivational interviewing, although the principles were adhered to as much as possible within these constraints. A brief refresher (half a day) was carried out to reinforce motivational interviewing techniques with the scheme facilitators. This allowed the facilitators to have more confidence in their ability with the techniques and helped to reinforce the ongoing significance of motivational interviewing values.

Development and improvement of the scheme procedures and protocols required ongoing contact between evaluator and the scheme providers (see Section 12.2 for reflections on process). Interim updates (quarterly basis) allowed elements of collected data and its relation to relevant literature to be presented, aiding the iterative process of scheme refinement. For example, evidence was supplied regarding the importance of group based physical activity sessions in providing benefits to patients; this resulted in an increased emphasis on this approach to provision across the scheme. Furthermore, the importance of the emphasis placed on ensuring completion was repeatedly highlighted at steering groups. This allowed resources to be targeted toward retention and subsequent completion, instead of simply targeting a high number of new referrals.

The evaluation culminated in a final report detailing: methods, recommendations and findings from investigations (Mills, Crone, James, & Johnston, 2007). For a summary of the Healthwise scheme and its evaluation see Mills, Crone and El Ansari (in press) (see Appendix B).

3.5: Descriptive Observation Method

The aim of the observation was to become familiar with the environment and its culture, to collect information to produce a detailed description of the settings used within the scheme (five leisure centres). Observation involves ‘capturing the life’ of the organisation being observed (Erlandson, 1993). Observation is a fundamental

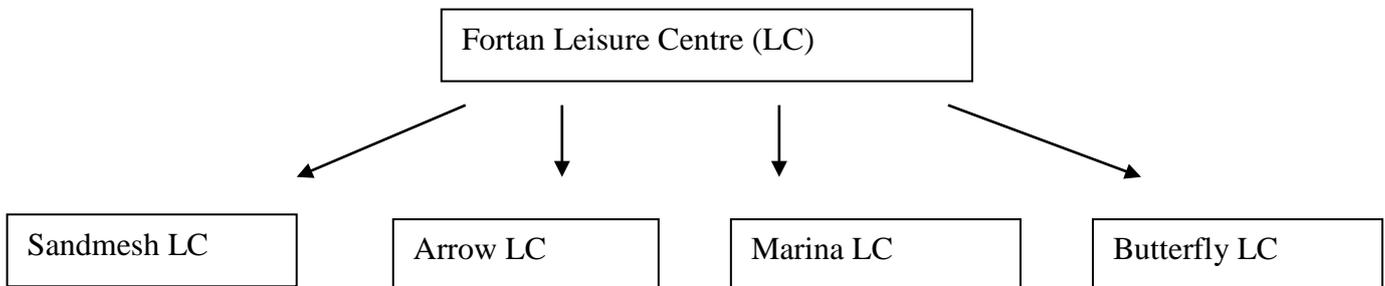
aspect of any research. The major strength of observation is that it is direct, and there is virtually no time delay between the occurrence of the responses in question and their recording (Breakwell, Hammond, & Fife-Schaw, 2001). Observing is considered the most natural of all ways of generating data (Morse & Richards, 2002). Observing unobtrusively however is extremely difficult. The assumption behind most observational strategies is that they enable the researcher to understand what is taken for granted in a situation and to learn what is going on by listening and watching. Although a distinction is often made between participant observation and non-participant observation it should be noted that no observer is entirely a participant and it is impossible to observe in almost every non-experimental situation without some observation (Morse & Richards, 2002). This approach provides an overview of the cultural scene and aims to describe and detail the facilities. The observation therefore aims to set the scene and assist in the transferability of the results. This technique has been described as descriptive observation and classes it as a process of observation taken from classical ethnography where the researcher attempts to cover the setting in a broad scanning manner (Grbich, 1999)

Data collection was undertaken through visits to the five leisure centres involved in the scheme during February 2006. Data collection methods included observation and informal discussion with staff and patients. Observations and field notes from discussions were recorded then written into a description. The observations took place during visits to the centres during the time when patients were undertaking the referral scheme. Where appropriate supervised and casual sessions were attended to observe patients, staff and other users interacting with each other within these e

3.6: Observation findings

The Healthwise Team consists of a project manager, project co-ordinator (who also works as a facilitator) and four other facilitators. All instructors are level three on the Register of Exercise Professional (REPs), with a specific general practitioner referral scheme qualification. Therefore they have the skills and knowledge to respond to the needs of special populations, referred onto the scheme. The facilitators have face to face contact with patients, providing the initial assessment, interim reassessments and the final assessment. The facilitators contact extends to providing support within the

group gym environment, highlighting progress, providing encouragement, answering questions and providing a consistent source of feedback.



²Figure 3.2: Healthwise Leisure Centres

Fortan Leisure Centre

The Fortan Leisure Centre is the ‘hub’ of the Healthwise scheme, all referrals are initially dealt with here. Each facilitator is based within one centre across the Borough, however all facilitators work at the ‘hub’ within the week, maintaining a central base for referral processing. This attempts to ensure that there is effective communication and that the large numbers of referrals, which are seen at the Fortan Leisure Centre can receive sufficient attention. This also allows the scheme manager to effectively coordinate the actions of all the facilitators and staff as recommended in the NQAF (Department of Health, 2001a).

The Fortan is situated just off of Woolwich High Street in East London (SE18). Woolwich is considered to be one of the poorest areas in London and has an unemployment rate of 14.8 % (national average 5.3 %) (Greenwich Teaching Primary Care Trust, 2006). The main entrance to the Fortan is through turnstiles, staff sit behind a window overlooking these turnstiles. The reception staff on the days of the observation to the centre were a mix of ethnic backgrounds, who appeared to be generally busy and somewhat unreceptive.

² Pseudonyms are used to refer to the leisure centres

The facilities at the Fortan include a well equipped open plan health & fitness gym, a sports hall, two group exercise studios, a twenty five metre main pool for lane swimming, leisure pool with slide, wave machines and saunas. There is a diner and seating area which overlooks the leisure pool. The diner is a big open plan canteen style area with fixed tables giving the impression of a fast food restaurant. This serves a range of food and drinks, such as sandwiches, carbonated drinks, jacket potatoes and chips. Through two sets of doors along the corridor there is a balcony that overlooks four courts set up for badminton. At the time of observation a group of older individuals (60 + years old) were playing a tournament with two badminton courts plus, one short tennis and one table tennis table. This balcony leads on to four squash courts and then the centre administration and Healthwise section, containing one main office, two consultation rooms and a central meeting room.

Patients referred to the scheme have an initial consultation appointment with one of the facilitators within a consultation room in the Healthwise part of the leisure centre. This is on the first floor out of the way of the main activity of the leisure centre. It involves a walk through most of the leisure centre to reach this area. The room where the consultation takes place appears slightly clinical due to the massage bed in one corner, then a simple desk and chairs for the consultation. At this first appointment the scheme is explained to the patient, its aims and how those are reached (i.e through attendance). During the observation period one of the introductory interviews was witnessed. At first the patient was asked to explain the background to their health issues, in the case of the appointment observed the patient attended with his wife. He retold the story of his various illnesses and looked to his wife for reassurance and clarification of dates etc. The atmosphere appeared relaxed and the conversation easy. The patient described how he had coped up to this point in time stating '*we just go as slow as I need to*'. The patient appeared to be motivated and enthusiastic and his wife was supportive of him taking those steps to increase his physical activity levels. This is a positive aspect of the Healthwise scheme as it accommodates the partners of the patients into the process of the scheme, allowing valuable support for the patient.

The gym is on the first floor and contains a wide variety of Technogym equipment. The gym area has modern looking wooden floors and green walls adorned with large pictures of fit people (around 20 years of age) exercising. The music played is an up

to date mixture of various types played at a fairly low level. There is extensive cardiovascular equipment in rows facing forward to the large television screens. There is always a fitness instructor present on the gym floor. At the time of observation there was a range of people in the gym area; the age range appeared to be 18 up to 70 years old, with different levels of fitness evident; also a variety of ethnic groups were evident in the gym area. At the time of observation a 'group gym' of Healthwise participants were in the gym area with one of the facilitators present throughout. Other gym members were also present in the fitness facility throughout although the Healthwise patients tended to exercise in one end of the gym not as a group but often in pairs. There were eleven Healthwise participants in attendance at the time of observation. The facilitators walked around the gym area, talked to the various participants about general everyday things and provided advice wherever possible, such as how to programme equipment. The facilitator also discussed progress with the exercise programme and how participants perceived they were advancing. Healthwise 'group gym' provides a valued opportunity for social interaction; it is a time when participants can come into the gym knowing a facilitator will be there and is also a chance to see some of the other patients.

The patients generally exercise on the equipment independently, but all in the same part of the gym. The participants appeared to know each other, however mainly stayed exercising alone or in pairs. One woman commented that it was '*much better to come in with someone*'. This highlights the importance of social support. In a casual conversation with one participant (woman in her 40s) walking on the treadmill whilst in Healthwise 'group gym' she commented on her progress '*when I first arrived I couldn't even get on the bike as the pain in my knees was too much. Now I have lost two and a half stone and my husband cant keep up with me*'. She went on to explain how exercise had become part of her life and stated that '*my family are behind me 100%*'. This demonstrates the importance of family support for the participants.

One facilitator had mentioned a new piece of equipment that been installed in the gym area for a trial period. This was called a 'power plate' situated on the edge of the stretch area. This provided an ideal medium for interaction with other members and the facilitator. Four of the Healthwise group gym participants were engaged in discussion regarding the different ways in which it could be utilised. This helps to

facilitate important interaction between the patients allowing the vital social networks to be developed.

Marina Leisure Centre

Marina Leisure Centre is situated in New Eltham (SE9). It is positioned in a housing estate in a slightly 'out of the way' location. This is a smaller centre than the Fortan with what appeared to be a friendlier atmosphere to it; it is quieter which is partly explained by its smaller membership base. There are outdoor facilities at this centre including a synthetic pitch, tarmac and grass pitches, tennis courts, a netball court and a cricket area with nets. Within the centre there are separate indoor and outdoor changing facilities. The outdoor facilities attract a lot of children's clubs to the centre. There is a small café and crèche area which opens out onto a small child's play area. There is also an inside studio for group exercise classes.

The reception area is open and the staff appeared to be approachable. The gym area is well looked after and particularly clean in appearance, the atmosphere is quiet and non-threatening, partly due to the neutral colours and calm environment. The gym is mainly carpeted, with a small wooden floor area, and a sofa nearby. The cardiovascular equipment faces the television screens. It is a small gym which is open plan with no separators or dividers. There are no free weights available in this gym, which results in fewer people lifting large weights, such factors are known to be intimidating for other gym users (Brooks & Lindenfeld, 1999; Scanlin, 2007). This therefore could be one of the more appropriate environments for people attending the scheme as they are often first time users of gyms who are particularly apprehensive. The music in the gym area is a recent mix played at a low level. For half a day each day a fitness instructor supervises the gym. The Healthwise office is a small office at the back of the gym. In the consultation observed the facilitator was in the gym with the participant guiding their exercise. The facilitator provided reassurance and praise. The conversation was easy and noticeable progress was congratulated and encouraged.

Butterfly Leisure Centre

Butterfly Leisure Centre is situated in Kidbrooke (SE3) within a housing estate, which is surrounded by imposing concrete buildings and some boarded up properties. The entrance to Butterfly leisure centre is through a turnstile, the reception area is open and at the time of observation there was a friendly member of staff at the desk. The area was busy with children on roller skates, having been in the sports hall. The sports hall has enough space for four badminton courts, however at the time the kids club were using the hall for trampolining. Although this may be considered to be inappropriate atmosphere for some patients, due to the noise it is unlikely to affect the scheme. Most sessions for the scheme are generally conducted in the gym area that is separate to the rest of the centre.

The Healthwise office is a small office joined to the gym, which is also used by the fitness instructor when they are working. A fitness instructor is present for two sessions a week; the rest of the time the gym is not supervised. The gym is a small room, with a large amount of equipment within it, leaving little room to manoeuvre. The equipment is of the highest standard although the technical functions are not utilised. There is a small free weights area, which is often used by avid weightlifters for intense training sessions. The music in the gym area is fairly loud and the area has a younger feel. Men who appear to be training enthusiasts, mainly populate the gym; this may prove intimidating to the consumers of Healthwise who are not used to an exercise environment. If the patients perceive themselves to be out of condition compared to the other members they may potentially be intimidated when attending this centre.

Arrow Leisure Centre

The Arrow leisure centre is located on Trafalgar Road (SE10). It is a red brick building and the entrance is via steps or a long ramp; there are then turnstiles upon entering the building. This leisure centre has much more of a health club feel, particularly the gym area itself, which has an inviting entrance with a large reception area with some comfortable seating. The gym area is extensive; there is one big cardio area with a large number of machines facing forward to the screens, however there are

also two smaller rooms containing cardio equipment. These rooms are slightly out of the way and provides areas for people to exercise in a more private environment, which may help to minimise the intimidation felt.

The equipment is all of a high standard, clean and laid out well within the space available. The gym contains a mixture of people, however it did predominantly contain what appeared to be a fairly young, professional base of members. One participant (woman in her late forties) during a casual conversation commented that *'the music at the Arrow was too modern for me'*. This comment highlights the need for the environment and atmosphere to be appropriate for the people utilising the service.

Outside of the gym area the leisure centre contained a large studio for group exercise; this had windows down one side to allow people to view what was going on inside. Another separate more secluded studio was available for use in the *'movewise'* (group exercise) programme. The Healthwise offices are spacious and welcoming in this centre. When a patient arrives the staff at the reception area direct them there via the lift, which takes participants to the offices. The Healthwise offices contain one big office with a smaller consulting room attached to it.

Summary

This observation has been provided to aid transparency and to allow for transferability; through a clear description of the context findings can potentially be applied within the framework of exercise referral. Observation of the environment and its characteristics has provided an appreciation of the processes and culture embedded into the schemes operation. This background sets the scene for the following research, enabling improved comprehension and understanding of participant experience and success.

Chapter 4 Methodology

4.1 Methodology

4.1.1 Introduction

This chapter provides an explanation the epistemological approach of the research process and the methods employed at each stage. The chapter begins with a discussion of paradigms and the debate surrounding the use of both quantitative and qualitative approaches within one study. The design of mixed methods research and the issues surrounding ensuring rigor in both paradigms is then addressed. The use of grounded theory techniques to assist with analysis of the qualitative aspect of the project is then explained. The chapter continues by highlighting the issues associated with the use of the focus groups and interviews for the qualitative aspect of the research. Finally the use of logistic regression for the quantitative analysis is discussed.

4.1.2: Combining quantitative and qualitative methods – a paradigm contradiction?

Paradigms may be defined as the worldviews or belief systems that guide researchers (Guba & Lincoln, 1994). There has been a debate within the social and behavioural sciences regarding the superiority of one or the other of the two major social science paradigms (Tashakkori & Teddlie, 1998). These two paradigms are known alternately as positivist approach which underlies the quantitative methods or the constructionist orientation which is known to underpin qualitative methods (Denzin & Lincoln, 2005). Table 4.1 shows a comparison of the assumptions and issues between positivism and constructionism.

Table 4.1

Comparison of two Dominant Paradigms

<i>Worldview constituent</i>	<i>Positivism</i>	<i>Constructionism</i>
Ontology (nature of reality)	Believe in a single reality	Believe in multiple realities
Epistemology (relationship of the knower to the known)	Believe that the knower and the known are independent	Believe that the knower and the known are inseparable
Axiology (role of values in inquiry)	Believe that inquiry is value-free	Believe inquiry is value bound
Methodology (process of research)	Deductive: Emphasis on arguing from the general to the particular or emphasis on a priori hypotheses	Inductive: There is an emphasis on arguing from the particular to the general or an emphasis on 'grounded' theory

The contradictions in the table make it clear to see why some social scientists would question the combined use of quantitative and qualitative methods, and argue that the purpose of these paradigms are so different that using them together is incongruent (Borkan, 2004). The fundamental statement underlying positivism is that it is a philosophy, which declares the suitability of the scientific method to all forms of knowledge; there is a widely held convention regarding quantitative research as founded on positivism (Creswell, Plano Clark, Gutmann, & Hanson, 2003).

Traditionally it is seen that deductivism and inductivism underpin quantitative and qualitative research respectively, however this is not always the case (Hammersley, 1996). Quantitative research can be purely descriptive or concerned with theory generation rather than testing predictions. Similarly, not all qualitative work is based solely on inductive methods. Hammersley (1996) points to the development of grounded theory and its original opposition to deductivism by Glaser and Strauss (1967). Strauss (1987) now highlights how grounded theory not only involves

induction but also deduction and verification. Hammersley (1996) has also suggested that all research in some way requires a level of induction and deduction.

Israel et al (1995) argue that while quantitative data gives an idea of the dimension of effects and enables the researcher to identify relationships among and between variables, this data may oversimplify complex components of a problem and fail to convey fully the richness of human experience. Collection and analyses of qualitative data to complement quantitative approaches in health related evaluation is becoming not only accepted but common (Basch, 1987). It has been recommended that ideally most evaluations should include sufficient quantitative data to assess the reach and generalisability of an intervention, and qualitative data to determine the depth of change for individuals, including any unintentional effects (Clark & McLeroy, 1998).

At this time, the paradigm debate is becoming less relevant as many active researchers have adopted the view of paradigm relativism, or the use of whatever philosophical and or methodological approach works for the particular research question being studied (Johnson & Onwuegbuzie, 2004). Pragmatically oriented researchers now refer to 'mixed methods', which contain elements of both the quantitative and qualitative approaches (Patton, 1990). Mixed methods research attempts to respect fully the wisdom of both of these viewpoints, while seeking a workable middle solution. Mixed methods is an approach to knowledge that attempts to consider multiple viewpoints, perspectives and standpoints (Johnson, Onwuegbuzie, & Turner, 2007). This allows researchers to use whatever method is appropriate for their studies, instead of relying on one method exclusively. Researchers can use all the different types of data collection available rather than being limited to the data type associated with either qualitative or quantitative research exclusively. Mixed methods aids research in answering questions that cannot be answered by qualitative or quantitative approaches alone (Creswell & Plano Clark, 2007). Essentially pragmatists argue that the research question should be of primary importance and consequently more important than either the method or the philosophical worldview that underlies it (Creswell & Plano Clark, 2007).

Table 4.2

Pragmatists Worldviews and Implications

<i>Worldview constituent</i>	<i>Pragmatism</i>
Ontology	Believe in singular and multiple realities- researchers test hypotheses and provide multiple perspectives
Epistemology	Practically - researchers collect data by ‘what works’ to address research question
Axiology	Multiple stances – researchers include both biased and unbiased perspectives
Methodology	Combining – researchers collect both quantitative and qualitative data and mix them

The mixed method approach contains both strengths and weaknesses, which are highlighted below (adapted from (Johnson & Onwuegbuzie, 2004).

Strengths of the mixed method approach includes the ability to add quotations and diagrams to attach meaning to numbers, and equally numbers can be used to add exactness to words and narrative. Mixed methods can provide research strengths from both methods; strengths of one method can be used to overcome the weaknesses of the other method by using both in one study. Insights and understanding can be obtained that might be missed when only a single method is used. This approach can provide stronger evidence for a conclusion through convergence and corroboration of findings. Therefore, the qualitative and quantitative research used together produce more comprehensive knowledge necessary to inform theory.

The mixed method approach also contains some weaknesses, for example, methodological purists state that research should always be within either a qualitative or quantitative paradigm. Some of the particulars of mixed research remain to be worked out in full by research methodologists such as the problems of paradigm mixing and how to then interpret any conflicting results.

For this study both quantitative and qualitative methods are combined in order to answer the research questions effectively. The results from the qualitative phase

provide an understanding of success for the parties (patients, facilitators and referrers) involved, although this may be considered to have limitations (for a further discussion on this see Section 11.3). The quantitative data is valued for its ability to explore the influences on success. This data allows the relationships between independent variables and measures of success to be identified.

By combining quantitative data with qualitative findings the construction of the meaning of success and how it is determined, can be more fully explained. The qualitative and quantitative findings will be mutually informative, providing a merged negotiated account of what they mean together. This integration will offer insights into the concept that could otherwise not be revealed by one study.

4.1.3 Mixed methods design

Combining quantitative and qualitative research can be done in a number of ways and a choice is made regarding which is the most meaningful for the research. There are four major types of mixed methods designs; the embedded, explanatory, exploratory and triangulation designs (Creswell & Plano Clark, 2007). Each design is considered below and the choice of design for the current research is explained. The embedded design is one in which one data set provides a supportive, secondary role in a study based primarily on the other data type (Tashakkori & Teddlie, 1998). Researchers use this design when there is a need to include qualitative or quantitative data to answer a research question within a largely quantitative or qualitative study. The explanatory design is a two-phase mixed methods design; the overall purpose is that qualitative data helps to explain or build upon initial quantitative results (Creswell et al., 2003). This is often used to explain outliers or surprising results (Morse, 1991). As with explanatory design, the intent of the two-phase exploratory design is that the results of the first method can help develop or inform the second method (Creswell & Plano Clark, 2007). With this design qualitative research is undertaken first to inform the quantitative instrument, with a greater emphasis placed on the qualitative findings on interpretation.

The purpose of triangulation design is to obtain different but complementary data on the same issue, in order to understand the research problem (Morse, 1991). This

method intends to bring together the strengths of quantitative methods (for example, large sample size, trends, generalisations) with those of qualitative methods (for example, detail, in depth analysis, information rich cases) (Patton, 1990). The Triangulation Design is a one-phase design in which researchers implement the quantitative and qualitative methods during the same time frame and with equal weight (Creswell & Plano Clark, 2007). It involves concurrent but separate collection and analysis of quantitative and qualitative data in order to comprehensively understand the research problem. The convergence model allows results from both methods to be converged by comparing and contrasting the different results during the interpretation. The purpose of the convergence model is to develop valid and justifiable conclusions about a single phenomenon. Figure 4.1 shows use of the convergence model for this current study.

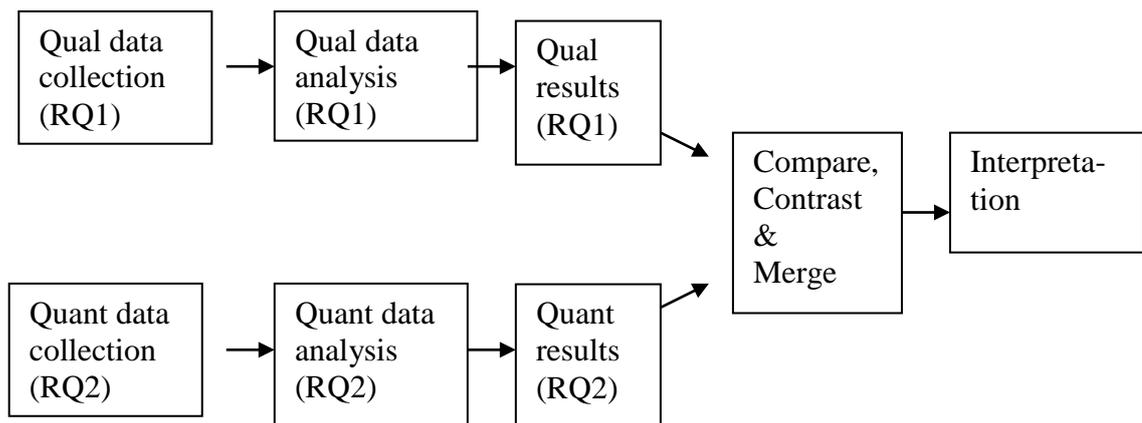


Figure 4.1: Triangulation Design: Convergence Model

This choice of design type is dependent on the objective of the research and how each data set is integrated into the study. The current study was carried out in the same time frame with equal weight placed on both parts of the study, therefore following the triangulation and convergence design. This allowed a fuller exploration of the research objective (Section 1.2)

4.1.4 Ensuring rigor across methods

Criteria for judging the rigour of inquiries carried out within the positivist paradigm are well established and include such measures as internal and external validity, reliability and objectivity (Angen, 2000). In the positivist paradigm internal validity refers to the extent to which the results of a study can be attributed to the conditions used in the study. In other words, the degree of certainty that the change in the independent variable is responsible for the change in the dependent variable (Schweigert, 1994). External validity is considered the extent to which the results of the study are generalisable (Thomas & Nelson, 1996). Reliability is the consistency with which the same results can be obtained (Schweigert, 1994). Objectivity refers to the assurance that the results are not influenced by biases or values of the researcher (Guba & Lincoln, 1994). These criteria are perfectly practical because they are grounded in the same worldview of the inquiry itself, claiming that knowledge about the world exists independent of the researcher. The criteria, however, become unworkable when applied to interpretive research, which is grounded in the belief that multiple meanings of the world are constructed by individuals and that researcher and data are not assumed to be independent. Therefore, a fundamental problem occurs when the criteria used for judging the quality of the research are based on different philosophical assumptions (Guba & Lincoln, 1989) (Table 3.1)

The constructionist paradigm assumes (see Table 3.1) a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent co create understandings) and a naturalistic (in the natural world) set of methodological procedures (Denzin & Lincoln, 2005). Trustworthiness is addressed in qualitative research where the aim is to support the argument that the inquiry's findings are "worth paying attention to" (Lincoln & Guba, 1985, p.290). Terms such as credibility, transferability, dependability and confirmability replace the more positivist criteria of validity, reliability and objectivity. These terms acknowledge the complexity of a social setting and the multiple perspectives and meanings drawn from the investigation by individuals using interpretivist methods. The table below (Table 4.3) displays a comparison of the issues associated with rigour for both quantitative and qualitative approaches to research.

Table 4.3

Rigor Comparison

<i>Quantitative</i>	<i>Qualitative</i>
Internal Validity; manipulation in independent variable = change in dependent variable	Credibility; compatibility between the multiple constructed realities
External Validity; Generalisable Reliability; consistency	Transferability; applicability Dependability; consistency – tracking changes
Objectivity; not influenced by biases	Confirmability; track interpretations and claims back to source

Credibility

Rather than seeking to validate a relationship between the findings of a piece of research and phenomenon under investigation, a naturalistic inquiry does not make the assumption of a single objective reality. The ‘credibility’ of such research is demonstrated therefore by the compatibility between the multiple constructed realities of the respondents and those that are attributed to them by the inquiry (Angen, 2000).

There are various strategies to support credibility of findings (Creswell, 1998; Denzin & Lincoln, 2005; Erlandson, 1993; Guba & Lincoln, 1989). One such strategy is prolonged engagement and persistent observation in the setting which contributes to the development of deeper understanding of a situation. Peer debriefing is an opportunity to discuss and refine analysis with people external to the situation. Furthermore, checks of the data and interpretations by a supervisor or another researcher can provide an opportunity to correct errors, clarify understandings and confirm the findings. Credibility is also supported through the use of triangulation with data from different sources and methods of analysis.

Transferability

External validity in positivist inquiries refers to how well causal relationships proposed can be generalised to other contexts and settings (Guba & Lincoln, 1989). Positivistic inquiries therefore tend to insist on random selection from a population to enable generalisations to be made (Erlandson, 1993). Within the interpretivist paradigm, however, no true generalisations are possible. All observations are defined by the specific contexts in which they occur. This does not mean that knowledge gained from one context will have no relevance to other contexts. Rather, demonstrating transferability is up to those who want to apply the findings elsewhere. They must establish the degree of overlap in order to make tentative statements about their applicability. It is therefore up to the researcher to design the inquiry to ensure transferability is possible. According to Denzin and Lincoln (2005) this can be done in two ways. The first being rich, thick description which allows the reader to make decisions regarding the transferability of findings. The second refers to theoretical sampling of data which deliberately uses the developing insights of the researcher to focus data collection in order to improve the emerging picture with rich detail.

Dependability

The qualities of reliability, predictability and stability in positivist research require that an application of the same method in an equivalent context will replicate the findings (Erlandson, 1993). However, in an interpretivist inquiry changes in methods will occur during the process of the inquiry due to changing understandings of the researcher. Tracking and explaining the sources of such variability through errors or better insights can improve the dependability of the research.

Confirmability

Positivistic research focuses on the objectivity of the researcher. The methods must ensure that the findings are free from the researcher's values or biases (Hammersley, 1996). In an interpretivist inquiry, rather than seeking statements of objectivity the truthfulness of the findings depends on being able to trace the interpretations and claims back to their source. Table 4.4 details the techniques used to establish rigor in the qualitative stage of the current research.

Table 4.4

Rigor in the Qualitative Stage of the Research (terms adapted from (Lincoln & Guba, 1985)

Trustworthiness	Technique	Action in this research
Credibility	Prolonged engagement	Work undertaken within the area for 3 years, consultant on development of scheme. Numerous steering group meetings with stakeholders and repeated contact with patients.
	Triangulation	A variety of methods have been employed for data collection (including focus groups, interviews and observation).
	Peer debriefing	Regular meeting (generally monthly) with supervisors. Discussion of findings with postgraduate students.
	Member checking	Presenting sections of findings to stakeholders in quarterly steering meetings for their commentary.
	Reflexive journal	A diary of events, thoughts, insights was kept through the research journal.
Transferability	Thick description	Descriptive observation allowed for the context of the scheme to be understood. The use of participant quotes provides a sense of understanding to the reader.
	Theoretical sampling	This was employed to allow the emerging social differences between the leisure centres to be explored, by targeting members from particular centre to examine differing perceptions.
Dependability	Audit trail	NVivo software was employed to assist with the storage of data and emergent findings to be organised to allow for an

		audit trail to be followed. Interview guides, memos, reports etc. also inform the audit trial.
Confirmability	Audit trail	The use of grounded theory method and management of data and diagrammatic development of models through Nvivo allowed for the findings to form a clear audit trail.

4.1.5 Computer assisted qualitative data analysis

Computer assisted qualitative data analysis software NVivo 2 (QSR International, 2002a) was employed to assist with the management and analysis of the qualitative aspects of the research process. This section examines the benefits and potential pitfalls of using software to assist with qualitative analysis. There has been some debate as to the extent to which software enhances or detracts from the quality of qualitative research (T. Richards & Richards, 1995). A criticism of early software was that it had the potential to transform qualitative research into a rigid, automated analysis of text (Kelle, Prein, & Bird, 1995). Software does allow text to be automatically coded for frequency counts which could ignore pertinent interpretations of the rich data (T. Richards & Richards, 1995). However, the software is simply a tool and qualitative research projects clearly need the researcher to interpret, conceptualise, examine relationships, document decisions and develop theory. The computer can assist with these tasks but it cannot think and thus the researcher is required to drive these processes in line with their particular methodological approach (Bazeley, 2007).

Weitzman (2000) suggests that software may distance the researcher from the data. However, it has also been argued that the computerisation of clerical tasks allows the researcher more time to spend on analysis and enables them to get ‘closer’ to the data than manual methods. Furthermore the built in tools for recording decisions,

conceptual and theoretical thinking and links between memos, documents, nodes and models allows the development of a dynamic audit trail, which demonstrates transparency. Computer software for the analysis of qualitative data has been commercially available for more than 20 years. Clearly, the debate has now moved beyond an assessment of the relative pros and cons of software to a more sophisticated debate regarding the impact of software on methods (L. Johnston, 2006)

In the current study, grounded theory was chosen as a methodology appropriate to developing theory. NVIVO 2 (QSR International, 2002a) was chosen because it supported the different techniques used in grounded theory used through coding, analysis and producing the final model (Bringer, Johnston, & Brackenridge, 2006).

4.2: Qualitative Methodologies

All qualitative research seeks understanding of complex data and can be considered only in context (Morse & Richards, 2002). Although the varying methodologies employ similar strategies, how the data is conceptualised is key to the methodology. For example within phenomenology, the researcher attempts to understand the essence of how people attend to the world, and recognises that a person's description is a perception and therefore a form of interpretation (Boyd, 1993). A major assumption that underlies phenomenology is that perceptions present us with evidence of the world, not as it is thought to be, but as it is lived. Phenomenology also acknowledges that people are in their worlds and are understandable only in their contexts. Phenomenology accepts the social constructionist understanding of the interrelationship between people and objects in the world and seeks to offer a meaningful reflection of the environment (Morse & Richards, 2002). Phenomenology is interested in an individual's perception and subsequent experience of an event rather than an objective statement about it. Phenomenology was a potential method for this thesis, however grounded theory was selected as the most appropriate method to achieve the objective.

4.2.1 Grounded theory

The qualitative aspect of this study has incorporated grounded theory methodology. The rationale for this specific type of qualitative methodology is drawn from the need for theoretical development in the chosen subject area. Grounded theory methods are used to direct and manage research allowing an original analysis of the data to be constructed (Charmaz, 2006). A fundamental principle of grounded theory is to let the key themes emerge rather than force them into preconceived categories (Charmaz, 1995). The explicit goal of grounded theory studies is to develop the theory derived from and grounded in the data. Due to this qualitative aspect of the research being fundamentally a fact-finding descriptive study to explore the perceptions of success, it is appropriate to allow the data to drive the theoretical assumptions in this manner. Grounded theorists often begin their studies with particular research interests and a set of general concepts (Charmaz, 1995).

Grounded theory allows individual cases and experiences to progressively develop into more abstract theoretical categories. Grounded theory methods are suitable for studying individual processes and the shared effects between individuals and social processes. Therefore participants' individual experiences of success within the scheme, and the influence this has on how they subsequently interact with the scheme, will allow a more complete picture of success to emerge.

Grounded theory has its origins in symbolic interactionism, taking the perspective that reality is negotiated between people and is always changing (Blumer, 1986). Grounded theory studies are usually situated in experiences in which change is expected and the method has become dominant in research areas where the understanding of change is essential such as in health (Henwood & Pidgeon, 2003). This reinforces its appropriateness as a methodology for investigating the concept of success within an ERS where change is expected and encouraged.

Grounded theory permits simultaneous involvement in data collection and analysis; there is 'continuous interplay between analysis and data collection' (Strauss & Corbin, 1994). This means that the emerging analysis can shape the data collection procedure. This allows a more focussed approach based on the emerging interests and

themes. When attempting to explore understandings and perceptions; such as is the case with this research, this methodology would appear fitting as it allows the flexibility to focus the research as different perceptions of success begin to emerge. Grounded theory methods aim towards discovering and defining processes; researchers look for patterns, even when focussing on a single case or individual (Strauss & Glaser, 1970). These patterns should begin to highlight the characteristics within the emerging concept of success for the different parties involved.

Essentially grounded theory methodology consists of systematic inductive guidelines for analysing data to build theoretical frameworks that explain the data (Charmaz, 2000). These guidelines are a set of general principles rather than rules (Charmaz, 2006). The grounded theorist builds the research as it ensues rather than having it completely planned before beginning the data collection. Similarly, it permits the data collection to be altered to pursue the most interesting and relevant material. This flexibility is beneficial for the type of explorative research in the present study as the findings cannot be reliably predicted. Therefore the data collection has to incorporate any information that becomes apparent.

Glaser and Strauss devised a systematic approach combining Glaser's rigorous quantitative training with Strauss's background in symbolic interactionism, resulting in a methodology that focused on studying process and meaning (Strauss & Glaser, 1970). Glaser and Strauss aimed to move qualitative inquiry beyond descriptive studies into the domain of explanatory theoretical frameworks, thus providing abstract, conceptual understanding of the studied issue (Charmaz, 2006). The development of this approach has, according to Rennie, Phillips and Quartaro (1988) helped provide credibility to qualitative research and began to draw together positivist and interpretative methods. Since these classic statements Strauss and Glaser have taken grounded theory in fairly divergent directions (Charmaz, 2000). Glaser continued to define grounded theory as a method of discovery, treated categories as emergent from the data and analysed a basic social process (Charmaz, 2006). Strauss moved the method toward verification and his co-authored work with Juliet Corbin (Strauss & Corbin, 1990, 1998) furthered this direction. Strauss viewed people as active agents in their lives. He assumed that process was fundamental to peoples existence. For Strauss subjective and social meanings relied on our use of language

and emerged through actions. It recognises the mutual creation of knowledge by the viewer and the viewed and aims toward interpretative understanding of subjects' meanings (Guba & Lincoln, 1994). Acknowledging that there are different forms of grounded theory, this research follows the set of procedures and way of viewing the world depicted by Strauss and Corbin's method of grounded theory.

In the grounded theory approach, data is coded according to an increasingly abstracted process aimed at the generation of a theoretical statement of the phenomenon under investigation; in this case the perceptions of 'success'. Coding means categorising segments of data with a short name that simultaneously summarises and accounts for each piece of data. Codes allow the researcher to select and sort data to begin an analytic accounting of them. Coding however is not merely to label all the parts of documents about a topic, but rather to bring them together so they can be reviewed allowing the thinking about the topic to develop. Coding shapes an analytic frame from which analysis can be built (Charmaz, 2006).

The first level of coding is open coding, which comprises of transcribed data being broken down into units of meaning (concepts), labelled (often using words close to those that were used by the participant) and questioned for alternative interpretations and the meaning of the gaps left unoccupied (Strauss & Corbin, 1998). Marrow and Smith (2000) describe units of meaning as small as a word and as large as a paragraph. The coded units of meaning are then compared to other coded units, the concepts are gradually gathered together into categories that embody them. These concepts continue to be compared to existing data and categorised. There is constant modification to incorporate new information as it is discovered.

The second level of coding is axial coding, in which relationships between categories are organised and further explored, grouping them into more encompassing fundamental categories that include several sub categories. This axial coding puts the fractured data from open coding back together in the structure of categories and their interrelationships enabling the next phase in generating theory. Axial coding is the strategy for bringing data back together again in a coherent whole (Strauss & Corbin, 1998). At this stage memo writing becomes critical to the process. Memo-writing is the pivotal intermediate step between data collection and writing drafts of papers. It

constitutes a crucial method in grounded theory because it prompts analysis of the data (Charmaz, 2006). Memos allow the researcher to capture comparisons and connections. Through conversing using memos new ideas and insights arise during the act of writing. Memo writing allows the researcher to be actively engaged in the data in order to develop ideas (Charmaz, 2006).

The final stage of the analysis in grounded theory involves the creation of theory, although there is considerable variability in the actual products of grounded studies as well as considerable disagreement about what constitutes an acceptable theory. This analytic stage starts with selective coding, in which a central or 'core' category is selected that incorporates all the other categories in to 'an explanatory whole' (Strauss & Corbin, 1998). A core story is produced which is a brief account of the most important aspects of the data, subsuming all of the other categories and conveying their relationships to the core story. When the core category and its story have been articulated, the process of defining the interrelationships between the core and other categories begins (Strauss & Corbin, 1998). Fundamental to grounded theory research is constant comparison which describes the principal analytical task as one of continually sifting and comparing elements throughout the course of the research (Richardson, 1997). By making such comparisons the researcher is sensitised to similarities and differences as part of the exploration of the full range and intricacy of the findings. The decision to stop gathering within grounded theory research, is guided by theoretical saturation. This is deemed to have been achieved when from analysis, it is clear that no new properties or dimensions emerge from the findings (Strauss & Corbin, 1998).

Grounded theory researchers can use the methods to further their understanding of experience and to expand its explanation while neither remaining external from it nor accepting objectivist assumptions and procedures. Thus social reality does not exist independent of human action; it is negotiated between people and is always changing (Charmaz, 2006). Thus while an emphasis is placed here on themes emerging from the data, inevitably this selection process requires interpretation on the part of the researcher. The researcher is attempting to capture the meaning of the concept to the participant but this involves interpretative evaluation of the data. Qualitative analysis may accept some inevitability of bringing the researchers personal and cultural

perspectives to the research, even stating that the empathy of shared cultural understandings may provide an important link between researcher and participant (Madill, Jordan, & Shirley, 2000). This interaction is acknowledged and seen as crucial to grounded theory, however by using the constant comparative method the researcher ensures every attempt is made to allow the data itself to drive the emergent theory. The researcher in this project is attempting to add insight and understanding and to create theory to provide explanation regarding how different parties within an exercise referral scheme view success and the influences on it.

The incorporation of grounded theory in a mixed method design may be questioned by purists. Some researchers claim that grounded theory is violated when researchers use concepts imported from existing literature to label categories identified in their own research (H. S. Wilson & Hutchinson, 1996). Grounded theorists of this purist nature are unlikely to recognise the legitimacy of a mixed methods approach that encompasses grounded theory findings. However, due to the characteristic of the research question being investigated, grounded theory is deemed the most appropriate qualitative method. The insights gained from the results from the qualitative phase provide a valuable understanding of success. By combining the grounded theory qualitative findings with quantitative results, the construction of the meaning of success can be more fully explained and offer insights into the concept that could otherwise not be revealed.

4.3: Methods of Data Collection: Focus Groups and Interviews

The focus group is an interview technique that involves a moderator-facilitated discussion among multiple participants about a specified topic of interest. A focus group at its simplest is an informal discussion among chosen participants about specific issues (Krueger & Casey, 2000). Focus groups produce qualitative data that provide insights into attitudes, perceptions and opinions of participants. For this research focus groups allowed the perceptions of the patients involved within the scheme to be accessed.

Wilkinson (1998) highlighted the usefulness of focus groups for researchers with an interest in accessing participants' own meanings, either as a research topic in their

own right or as an adjunct to other more conventional (or positivist) approaches. The current research will investigate first the patients' own meanings of success through the use of focus groups. The resulting data will then be combined with the findings from quantitative analysis to provide a complete picture of the definition of success and the influences on it (see Sections 9.2 & 9.3).

Focus groups provide a methodology that can enable researchers to learn about the meaning of a construct from the perspective of the particular population being studied. Fundamentally they are a way of listening to people and learning from them (Morgan, 1998). Focus groups are considered a useful method for learning about the language and thinking patterns of a population within its social environment (Hoppe, Wells, Wilsdon, Gilmore, & Morrison, 1994). This should allow the results to be grounded in the patient's voice, so that their view can be displayed accurately.

Focus groups allow the researcher to both direct the conversation towards topics that require investigation and to follow new ideas as they arise (Morgan, 1998). This also highlights how the researcher can influence the investigations. This influence however is diffused by the very fact of being in a group rather than a one to one situation (Frey & Fontana, 1993). These can be seen as a benefit of focus group research for researchers who are primarily interested in participant's own meanings such as is the case with this research. This method should enable the patients to talk about themes that are important to them.

Focus groups offer many potential advantages when compared to one-to-one interviews. Among these advantages is that participants not only respond to questions posed by the researcher but they also respond to the comments from the other members in the group. They both query and explain their views to each other. Morgan (1996) stated that this makes focus groups more than simply the sum of separate individuals. Due to the interaction among focus group members a more in depth discussion of events can be provoked than that obtained in a one-to-one interview, in which a single participant answers the questions of a researcher (Greenbaum, 1998). Focus groups are a relatively naturalistic method, which enables comparatively spontaneous interaction between people. Focus groups therefore increase the

likelihood of gaining deeper insights than might arise from individual interviews (Hoppe et al., 1994).

Krueger (1994) stated that the attitudes and perceptions relating to programmes are developed in part by interaction with other people. Within this social constructionism stance people are considered to be a product of the environment and are influenced by people around them (Mason, 2002). People may need to listen to opinions of others before they form their own viewpoints. Although some opinions may be developed quickly and held with absolute certainty other opinions are flexible. (Krueger, 1994). Focus groups permit these changes in opinions to be monitored, as they happen. This will therefore enable the complex processes involved in defining success to be unpacked.

Furthermore, participants can tend to feel more comfortable discussing experiences with similar others, therefore a more open and honest discussion may ensue compared to that in a one-to-one interview with a researcher who is not a member of the target population (Basch, 1987). This is relevant as in the current study because the young, white, female researcher is attempting to capture the views of men, different ethnic groups, and older people. In general previous research suggests that both female and male participants tend to prefer female interviewers regardless of whether that individual is a member of the population (Farquhar, 1999). In the current study the female author, carried out all the focus groups. Focus group participants' comfort and openness may also be influenced by whether the participants have ongoing social contact outside the research context. Participants may feel more comfortable revealing certain types of information to anonymous others than to those they will continue to have contact (Farquhar, 1999). In the current study the researcher did not have any ongoing contact with the participants. However, the participants may well have contact with each other, which has the potential to influence their responses to those that may be considered to be socially desirable. Other factors may also limit the usefulness of data obtained from focus groups. For example, the inclusion of an extremely dominant participant can manufacture results that are not reflective of the entire groups' perspectives (Farquhar, 1999). Attempts to counteract this were made by the researcher, by directing comments at other participants in an effort to even out the responses and obtain a more evenly balanced notion. However, the focus groups

were still subject to the influences of different patients' characters and confidence levels.

Group interaction may produce conformity pressures, which could alter the individuals perception of events (Byers, Zeller, & Byers, 2002) or simply limit the information that participants are willing to provide. In contrast, however, Millward (2000) has suggested that group pressures may restrain individuals from providing misleading information. Therefore, focus groups may provide a method to elicit particularly honest views and opinions. It is possible that focus groups will actually enhance disclosure as the people answer each others questions and resolve disagreements (Wilkinson, 1998).

As a method of data collection focus groups have been increasing in popularity in health related research (Kitzinger, 1995). The focus group technique, according to Morgan (1988), is an under used method in social research. Focus groups draw upon participants' attitudes, feelings, beliefs, experiences and reactions. Kitzinger (1995) states that the interaction enables participants to display their view of the world, allows them to use their own words to explain their beliefs and attitudes and allows them to ask questions of each other and to re-evaluate their own understandings of their experiences. This reiterates the justification for focus groups in the current research as the research aims to elicit perceptions and opinions of the concept of success. Focus groups also enable the research to gain a larger amount of information from a range of people in a relatively short time. Ideally according to Kitzinger (1995) they consist of between four and eight people.

At the most basic level, interviews are conversations (Kvale, 1996). Kvale (1996) characterises qualitative research interviews as attempts to understand the participants' point of view, to unfold the meaning of peoples' experiences. In a qualitative scheme evaluation, open-ended responses to questions provide the evaluator with quotations, which are the main source of data. These quotes can be used to reveal the respondents' levels of emotion, their thoughts about what is happening, their experiences, and their basic perceptions (Patton, 1987). The task for the qualitative researcher is to provide a structure within which people can respond in a way that represents accurately and thoroughly their point of view about the scheme.

Individual interviews are a technique commonly used in qualitative research to explore specific experiences of individuals, their beliefs and perceptions of an issue (J. A. Smith, 1995). They provide a semi-private and confidential opportunity to express feelings and views that participants may not feel ready to share within a focus group interview. They also enable the researcher to follow up on themes of interest as and when they arise. Individual interviews will be utilised in this research for the facilitators and referrers who are involved in the scheme (see Section 5.4,5.4).

Interviews are increasingly being considered as active exchanges rather than a neutral method to gather data; this therefore leads to negotiated, contextually based results (Silverman, 1993). The researcher is considered both active and reflexive within the process (Mason, 2002). Qualitative interviewing is a relevant technique for this aspect of the research due to the ontological position. This suggests that people's knowledge, views, understandings, interpretations, experiences are meaningful properties of the social setting being explored and most importantly a focus for the research is about people's perceptions. Interviews were utilised in this research for the facilitators and referrers. Interviews were deemed the most effective method to gain this data as the facilitators knew the researcher and were comfortable and confident to engage in this manner. With only four facilitators being involved in the scheme it was also practical for them to be interviewed individually. Telephone interviews were utilised for the referrers. The referrers were health professionals (practise nurses and general practitioners) the schedule of these professionals meant that this was the most suitable method to gain access to their opinions.

4.4: Question development for interview/focus group schedule

In order to ensure that pertinent and useful information was derived from the focus groups and interviews, considerations were made regarding the choice of location, the procedure and the composition of the group (for focus groups) (Grbich, 1999). Semi-structured questions were developed based on types suggested by Patton (1980).

Table 4.5

Types of Questions (Patton, 1980, cited in (Erlandson, 1993))

Types of questions	Examples from qualitative research
1. Experience/behaviour	Can you describe your experiences on the scheme?
2. Opinion/ value	What do you see as success for people in the scheme?
3. Feeling	I'd like you to think back to when you first started. How did you feel in yourself then?
4. Knowledge	Do you think the scheme has been a success for you?
5. Sensory	We are interested in what people think about different aspects of the scheme. What do you think about the environment?
6. Background/ demographic	You are currently taking part in an exercise referral scheme, can you start off by telling me about how you came to be on the scheme?

An interview schedule for the focus groups was devised based on the aims and objectives of the study and in accordance with Charmaz's (2006) recommendations for interview schedule design, in grounded theory studies. This contained broad open-ended questions to invite detailed discussion, allowing the researcher the freedom to follow new ideas as they arise and to adapt the schedule appropriately. This process of question development was followed for all three interview schedules, for the patients, facilitators and referrers (see Appendix C, D, E).

4.5 Ethical Considerations

The research proposal was scrutinised by the University's Research ethics sub-Committee (RESC) and as such deemed to meet the University's ethical guidelines for research in respect to confidentiality, anonymity, data protection and storage of data. The Bexley and Greenwich Research committee advised that the project was not required to be ethically reviewed under the terms of the Governance Arrangements for Research Ethics Committees in the UK (for confirmation of this, see Appendix H).

Chapter 5: Methods

5.1: Introduction

This chapter details the methods used for the current research. The place of descriptive observation is discussed. The methods for the three parts of the qualitative research and finally the quantitative method is then conveyed. The methods undertaken in this research are in keeping with the research questions and maintain the ecological validity of the exercise referral scheme being investigated.

Research questions

RQ1: What is success, as perceived by the three main parties (patient, facilitator, referrer) involved in the Healthwise Exercise Referral Scheme?

RQ2: Of the routinely collected scheme evaluation data, which of the independent variables are associated with the dependent variables?

5.2: Part – Patient Focus Groups

5.2.1: Part 1- patients

Four focus groups were undertaken (for discussion of focus groups as a method, see Section 4.3). These were conducted between April and August 2006. Patients had all been referred from within the Borough of Greenwich, London, to the Healthwise scheme in the three-year period since the start of the scheme (January 2005). Seventeen patients (13 women and 4 men) attended; ages ranged from 31 to 68 years with a mean age of 54.7 years, (SD 12.4).

5.2.2: Part 1 – procedure

Suitable patients were identified by the Healthwise coordinator. This method of sampling is called selective sampling and is appropriate in qualitative research to ensure that the participants will provide an information rich case regarding the specific area of investigation (Strauss & Corbin, 1998). Once the coordinator had identified suitable participants the patients were sent a letter to provide them with

information regarding the project (appendix F). This letter detailed the aims of the focus groups, the format, the voluntary nature of their participation and pre warned the patients that it would be recorded. Approximately 20 invitation letters were sent out for each focus group. The participants were then telephoned and asked if they wanted to be involved and to set up a date for a meeting and the patient's involvement was more fully explained. It was made clear that their responses would help improve the running of the scheme by providing valuable feedback for those who provide the scheme and would also form part of a research project. Following this information, approximately 10 patients agreed to take part in each of the focus groups. This number were asked in an attempt to secure between 4 and 6 participants for each group, as it was expected that a few patients asked may not actually attend. Between 4 and 6 is considered an appropriate number of participants for a small focus group (Kitzinger, 1995).

On arrival at the room designated for the focus group, each patient signed a consent form stating their willingness to be involved in the study (Appendix G). These focus groups, wherever possible, took place at the nearest convenient location for the patients. They each lasted between 40 minutes to an hour and collectively generated approximately 15,500 words. Focus groups 1, 2 and 3 started with patients appearing slightly nervous at the start. However once discussions developed participants seemed to relax, helping the interviews to run smoothly. Focus group 4 involved women who already knew each other fairly well from group exercise classes, which appeared to make them to feel more comfortable from the beginning of the session, thus the discussions started with ease.

5.3: Part 2 – Facilitator Interviews

5.3.1: Part 2 - facilitators

Four facilitators were interviewed during either May or June 2006. Age ranged from 26 to 50 years, with a mean age of 33.5 (SD 9.63). The facilitators worked at the various leisure centres involved in the scheme. This was dependent on scheduling, which was based on the current work load at each centre.

5.3.2 Part 2 - procedure

The individual interview technique was employed to retrieve rich information about a single participant's experience of the scheme (Erlandson, 1993) (see Section 4.3). As each facilitator had a large input into the scheme this method was appropriate to fully appreciate the facilitator's perspectives on the scheme. Each facilitator received an information letter and was aware of the aims of the study (Appendix F). Semi-structured questions were developed to ensure the relevant topics were covered (Appendix D). Each facilitator signed a consent form before the interview (Appendix G). Each interview lasted between 30 to 40 minutes and collectively generated approximately 11,000 words. These interviews took place in consultation rooms of the main leisure centre.

5.4: Part 3 – Referrer Interviews

5.4.1: Part 3 - referrers

Seven individual telephone interviews were undertaken with referrers to the scheme (see Section 6.3), (one male, six females who included 2 doctors and 5 nurses).

5.4.2: Part 3 – procedure

Telephone interviews were deemed the most appropriate method to access this group, due to the time pressures imposed by their role (see Section 4.3). Questions were developed and refined based on question types suggested by Patton (1980) (see Section 4.4). A full list of questions is given in Appendix E. Referrers were chosen from a list of active referrers provided by the scheme coordinator. An information letter was sent explaining the details of their involvement (Appendix F). This was followed by a telephone call to arrange a time to be interviewed and the referrer gave their consent to be interviewed. Each interview took approximately 10 minutes and generated collectively approximately 4,500 words.

5.5: Data Analysis

5.5.1: Parts 1, 2 & 3

The focus groups and interviews were recorded and transcribed verbatim using Strauss and Corbin's (1998) grounded theory method as a technique of analysis, for all three study parts. Data was collected across a period of five months; initial analysis was undertaken from the preliminary data, and there was continued engagement with this data and the subsequent information as it was obtained.

As described in Chapter 4 (section 4.2.1) grounded theory methodology allowed for the systematic analysis of data through the process of open, axial coding, memoing, and the formation of a conceptual framework (Charmaz 2006). Data was managed and organised using NVivo qualitative software package (QSR International, 2002b), which facilitates the iterative process inherent in grounded theory methodology (Bringer et al., 2006). NVivo aids the alternation between open coding, writing memos, axial coding and modelling which in turn facilitates the constant interplay of analysis and theorising. Data was collected across a period of several months, initial analysis was undertaken and interwoven with subsequent data collection.

In order to demonstrate trustworthiness and rigour (for discussion of rigour see Section 4.1.4) a detailed account of the techniques employed for the analysis of the qualitative data is provided. Screen prints from NVivo from significant points within the analysis process are provided to illustrate the use of NVivo in the thesis and to aid transparency of the findings (Bringer, Johnston, & Brackenridge, 2004).

Open coding allowed the formation of initial categories; this process broke down the data into manageable pieces. Each transcript was read a number of times and the process of coding began within NVivo by highlighting a section and attaching a free node to the passage as a label. The size of coded text can be as long or as short as it needs to be (from a character to a paragraph); this allows the coding to be natural (Bazeley, 2007). Following grounded theory process, the coding was inductive with

no preconceived categories (see Section 4.2.1). This resulted initially in 34 free nodes being assigned to the collective data, examples of which are shown in the figure 5.1.



Figure 5.1: Example of Initial Free Nodes ³

The process of axial coding allowed the data to be reassembled through the use of memoing and diagramming. This allowed the more simplistic labels used in the open coding to be merged into a more meaning ‘in-depth’ code. The data was examined for similarities and differences. Coding queries aided this process and helped reassemble the fractured data (Bazeley, 2007). An example of this was querying the data to see which text is coded at ‘social acceptance’ and ‘facilitator impact’ to see an

³ Screen prints are provided to illustrate the use of NVivo in the thesis (Bringer et al., 2004).

intersection of coding. This shows the sections of text coded at both nodes and therefore brings to light their connection. It is considered that making comparisons between nodes is made easier when the nodes are then organised in a hierarchical structure (T. Richards & Richards, 1995). The nodes are represented in a tree structure which is designed to help interrogate, rather than purely represent the data. The hierarchical structures are designed to make finding nodes easier, to aid in viewing categories in relation to others. However, the tree structure does not represent a model of emerging ideas, this is developed from further inspection and analysis by the researcher (see Section 4.2.1).

The name of the theme was clarified and passages compared, merged or taken out accordingly. Viewing and reviewing coding in such a manner allows recognition of incidents that do not fit into a category to be recoded. Merging also took place if two categories were considered to be essentially the same, such was the case with ‘determination’ and ‘motivation’. The coding stripes tool was also utilised to highlight discrepancies in coding, the need to refine the coding and suggested the relationships that may exist between codes (Bazeley, 2007).

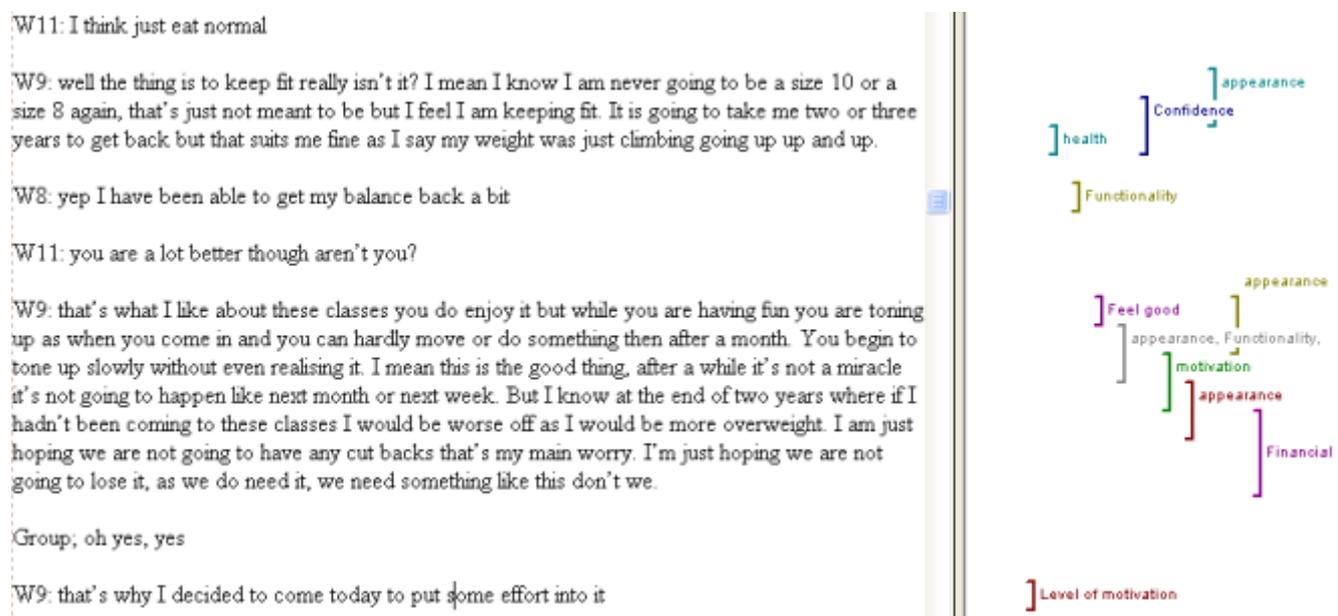


Figure 5.2: Coding Stripes Illustrating Coding

A memo was attached to each node in the study to justify the selection of passages and the naming of the node. This aided the recommendation made by Strauss (1987) for researchers to discuss ideas conceptually in memos, rather than in relation to individual participants, allowing broad thinking regarding properties and dimensions. Memoing facilitated the movement from description to analytically thinking surrounding the emerging concepts (discussion on analytical thinking in grounded theory see Section 4.2.1) .

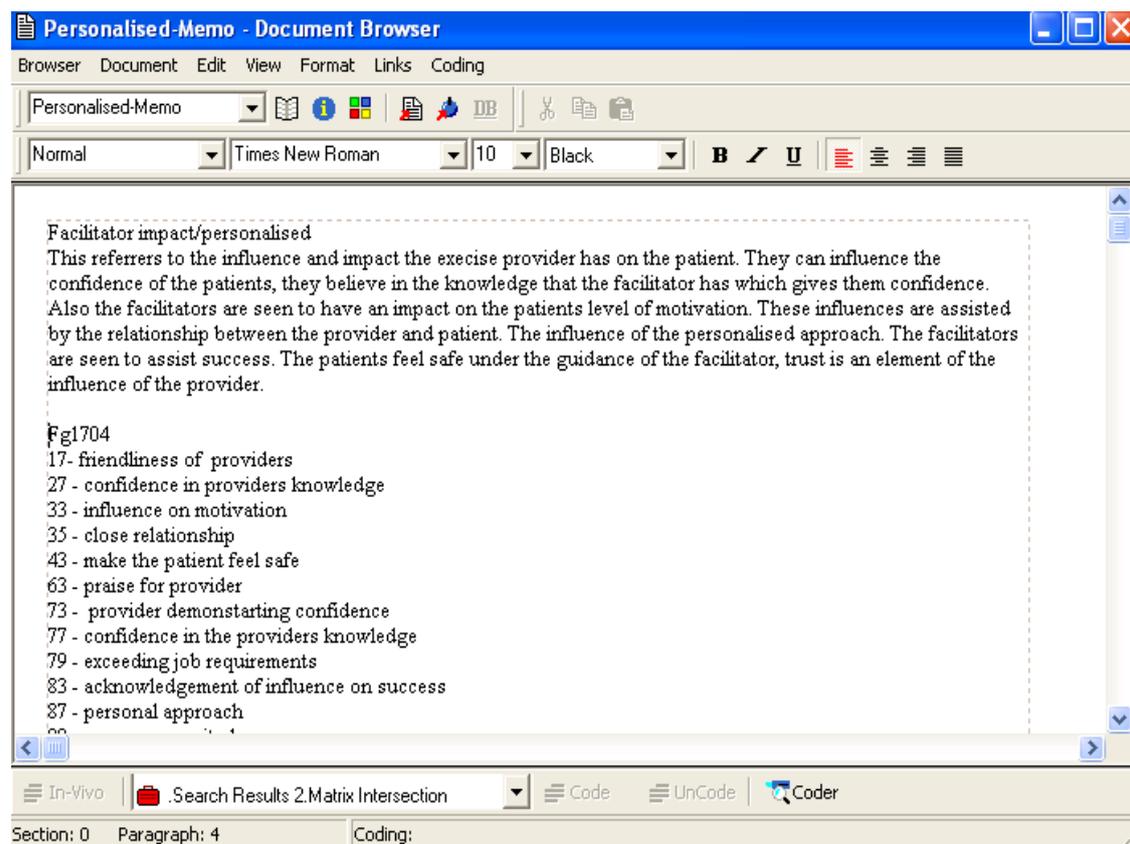


Figure 5.3: Example of Node Memo

Examining links between categories began the development of an explanatory model, where the central phenomena, conditions, actions and consequences are linked and detailed. Search operations were used to assist the examination of the data. These included the ability to search for text and combinations of text and proximally coded items. The use of this paradigm model approach helped to guide the understanding of the main issues surrounding success, by considering the structure and process of actions. This was used throughout the analysis phase to assist in structuring the data in a more systematic manner (Strauss & Corbin, 1998).

The modeller was used to facilitate exploration of ideas in a visual format without changing the database of the project (Bazeley, 2007). The nodes were moved around the screen into related clusters. Nodes were accessed and reviewed within this function.

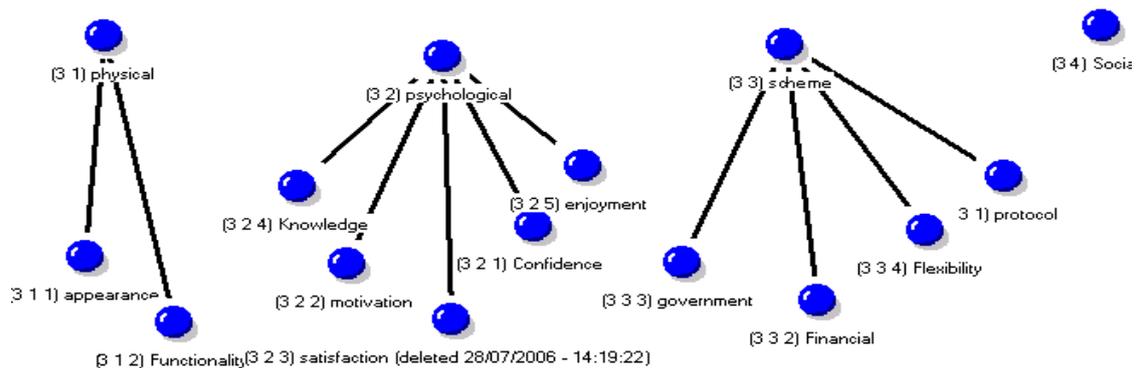


Figure 5.4: Early Cluster Model

This process was followed by the identification of a core category which then integrates the themes from the axial coding into a model (see Section 4.2.1). These methods in conjunction with the constant comparative method (where incidents within each theme were compared along with the comparison of themes to each other) helped to clarify the developing theory (Bazeley, 2007). This process allowed the comprehensive development of properties and dimensions of the themes. It became apparent that theoretical saturation had been achieved, as no new or relevant data seemed to emerge for each theme and the relationships between the themes appeared to be well established (Strauss & Corbin, 1998). Furthermore, the theme development was dense and all the paradigm elements were accounted for. This allowed the development of the conceptual framework that explains the perceptions of success within exercise referral from the perspective of the participants. Further comparisons and interrogation enabled the three perspectives to be combined to form an overall representation of the concept of success, for the Healthwise scheme (Section 6.4).

5.6 : Part 4 - Quantitative Method

This part of the study investigated patients referred to the Healthwise ERS during a three-year period, starting from January 2005. Quantitative data was routinely collected by Healthwise staff during this period and entered into the database used by the Healthwise ERS (fitness publisher). Data was then extracted for analysis to investigate the influence of independent variables (e.g., ethnicity) on dependent variables (e.g., weight loss).

Data cleaning

The initial extract from fitness publisher contained 3308 patients. Initially 1573 patients were removed as these were the patients categorised as 'did not start' or 'in progress', these had no outcome data. This resulted in 1735 potential patients for analysis. Much of this data, however, contained missing information such as an ethnic or occupation code, weight data and referral reason. This missing data was pursued through communication with the scheme facilitators. As far as possible new information was tracked down from paper records allowing this information to then be included in the data set. The final complete data set consisted of 1315 complete data records, containing no missing data.

The independent variables included: Gender, Age, Ethnicity, Occupation, Referral reason, Attendance.

Gender

Gender was entered directly as an M or F in the dataset.

Age

Age was on a continuous scale.

Ethnicity

Ethnicity was grouped into five broad categories to allow for more meaningful analysis. Categories were based on ethnic groupings provided by the primary care

trusts, in accordance with the published guide for the collection and classification of ethnic data (Department of Health, 2003a).

Table 5.1:

Ethnicity Coding

<i>Code</i>	<i>Broad category</i>	<i>Group Included</i>
W	White background	White British, white Irish, other white background
A	Asian background	Indian, Pakistani, Bangladeshi, other Asian background
B	Black background	African, Caribbean, other black background
C	Chinese background	Chinese, other ethnic group
M	Mixed background	White and black African, White and Asian, White and black Caribbean, other mixed background.

Occupation

The patients' occupations were grouped into eight broad categories. Occupation provides an indication of socio-economic status, alternative socio-economic measures, such as housing tenure, education level and access to a car are also used in some research (M. Shaw, Dorling, & Smith, 2006). There is considered to be no 'gold standard' for socio-economic measurement and there is continuing debate about how best to capture socio-economic data (Carr-Hill & Chalmers-Dixon, 2002). Occupation was deemed appropriate for the population group and was consistently collected by the facilitators, making this measure accessible and consistent.

Table 5.2

Occupation Coding

<i>Code</i>	<i>Employment category</i>
1	Unemployed
2	Retired

3	Unskilled
4	Partly skilled
5	Skilled Manual
6	Skilled non manual
7	Managerial
8	Professional

Referral reason

The main referral reason given by the referring health professional provided an objective explaining variable. The reasons for referral were grouped into eight broad categories which incorporated related conditions, similar to those chosen by James et al (2008).

Table 5.3
Referral Reason Coding

<i>Code</i>	<i>Broad category</i>	<i>Included Conditions</i>
C	Cardiovascular heart disease	Myocardial infarction, coronary artery bypass surgery, angina, silent ischemia, arterial fibrillation, chronic heart failure, peripheral arterial disease, hypertension
P	Pulmonary Diseases	Chronic obstructive/restrictive pulmonary disease, asthma
M	Metabolic Diseases	Diabetes, hyperlipidemia, obesity, hyperthyroidism, hypothyroidism
O	Orthopaedic Diseases	Arthritis, lower back pain, Osteoporosis, fibromyalgia, other bone musculoskeletal
N	Neuromuscular Disorders	Stroke, spinal cord disabilities, multiple sclerosis, cerebral palsy, parkinson's disease
S	Sensory Disorders	Deaf and hard of hearing, visual impairment
MH	Mental Health	Depression, anxiety, stress mental other
A	Miscellaneous	Cancer, maniogeomia, epilepsy, hepatitis C

Attendance

Attendance was recorded by the scheme facilitators to reflect success. Patients were categorised into one of three groups. Attendance was an independent variable for the weight loss and blood pressure models, but a dependent variable for the attendance model (see Figure 4.5).

Failed – reflects starting on the scheme but not attending the final assessment.

Partial – reflects attending the final assessment, but attending under 80% of sessions.

Success – reflects undertaking at least 80% of the recommended sessions and also attending the final reassessment.

Determined with the facilitator, 80 % was chosen as a gauge for this category, based on previous research (Gidlow, 2008).

Incorporating two levels of success (partial and success) could potentially provide the option for further comparison between patients with differential levels of attendance. Despite this, an assumption was made that those who had reached the end of the scheme had engaged with the scheme and could therefore be considered successful. Furthermore, the partial success option was selected for only a small number of patients (130 patients), accounting for 9.9% of the patient attendance data. These factors lead to the decision that the success and partial success categories could be meaningfully combined, forming one attendance group as with previous research (Hammond, Brodie, & Bundred, 1997; Lord & Green, 1995; W. Stevens, Hillsdon., Thorogood, & McArdle, 1998).

The dependent variables for the logistic regression models included; attendance, body mass data and blood pressure data.

Attendance

Attendance was a dependent variable for one of the regression models. Both success and partial success reflect those patients who reached the end of the scheme and attended their final assessment. The partial and success categories were grouped

together allowing for a binary outcome measure (see Section 11.1 for limitation discussion).

Body Weight data

Body weight data consisted of initial mass in kilograms and final mass recorded at the last assessment by the facilitators. Body weight loss is an important goal for overweight patients because it ameliorates or eliminates many of the medical illnesses associated with obesity and can prevent the development of new obesity related disorders (Di Pietro, 1999). Intentional weight loss improves many of the medical complications associated with obesity (Blackburn, 1995; Jakicic et al., 2001). Successful weight loss category consisted of those obtaining any loss (coded 1).

Blood pressure

Blood pressure data consisted of initial diastolic and systolic readings and final diastolic and systolic readings for each patient. Diastolic and systolic measures were combined to obtain mean arterial pressure (MAP) as follows: $MAP = DBP + [1/3(SBP-DBP)]$. This resulted in one value for comparison. Mean arterial pressure (MAP) is the average blood pressure in arteries and at rest is approximately one-third of the difference between diastolic and systolic pressures added to diastolic pressure (Tortora & Derrickson, 2006). Any reduction in mean arterial pressure from the start to the end of the scheme, was coded as a success (1) for analysis.

Research question 2 required an exploration of factors that influenced the likelihood of patients falling into each of the success categories.

These outcome variables were therefore constructed as dichotomous outcome variables. Therefore a three stage logistic regression (LGR) was used resulting in 3 stages (referred to as 3 models) with binary dependent outcomes.

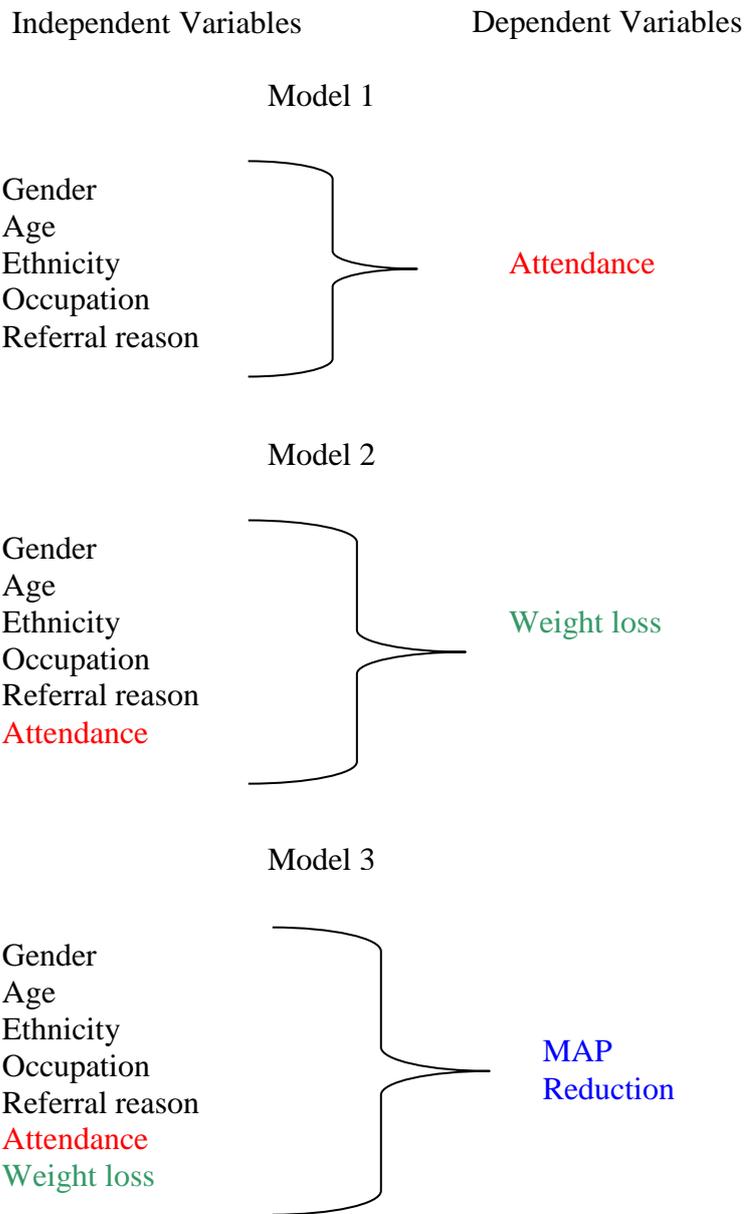


Figure 5.5: Variables Included in the Multiple-stage Regression

5.6.1: Logistic Regression

Due to the nature of the research question (RQ2), the large number of participants and the type of data collected, logistic regression analysis was considered to be the most appropriate statistical approach to analysis.

Logistic regression (LGR) is a form of multiple regression and can therefore examine the influence of several independent variables on the dependent or outcome variable (Kirkwood & Sterne, 2003). It is considered to be particularly appropriate for models involving health states and decision making and is therefore widely used in the health sciences (Bagley, White, & Golomb, 2001). Population researchers have used logistic regression to explore the determinants of physical activity outcomes for over a decade (Sallis & Owen, 1999). LGR also has the advantage that it can be used to examine the impact of both continuous and categorical independent variables (Kirkwood & Sterne, 2003). Logistic regression is flexible in its assumptions, as it does not need independent variables to be normally distributed, linearly distributed or have equal variance within each group (Altman, 1994). This was needed to accommodate the continuous variable, age and the categorical variable of occupation, condition (referral reason), and ethnicity and gender (also attendance when used as an independent variable). As the decision to take part in an intervention is complex, the relevance of LRG in unravelling the intertwined psychosocial and demographic factors that affect the patient's decision to take part becomes apparent. Therefore, logistic regression analysis was the most appropriate statistical tool, to effectively address the research question (RQ2).

Logistic regression analysis allowed for the prediction of participants' success (as measured by the three outcomes), from their individual characteristics (age, gender, ethnicity, occupation, referral reason) and behaviour (attendance). There are a number of different methods that can be used in logistic regression. The 'enter' method involves all the covariates being placed into the regression model in one block. Some researchers believe this is the only appropriate method for theory testing (Studenmund & Cassidy, 1987). The stepwise method is the alternative, which involves either

adding in or taking out a predictor based on specific criterion. Stepwise methods are said to be defensible when used in situations in which no previous research exists (Menard, 1995). Both methods are potentially defensible for this research design.

In answer to the research question (RQ2) the enter method is presented. However outcomes were unchanged when models were run entering independent variables in a stepwise manner rather than simultaneously.

In order to determine that there are sufficient cases for the number of variables included in the models a checking method was carried out. The number of the least common of the possible outcomes, divided by the number of variables should be at least 10 (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996).

Goodness of fit tests were carried out on each model in turn; the observed and predicted frequencies were also provided. The variables involved (including dummy variables) in each model are presented. Residuals were examined to explore the fit of the data and discriminant analysis undertaken to check that any discrepancies in the data had not influenced the results.

Chapter 6: Qualitative Results and Discussion

RQ1: What is success, as perceived by the three main parties (patient, facilitator, referrer) involved, in the Healthwise Exercise Referral Scheme?

This chapter details the qualitative findings by presenting conceptual frameworks for the perception of success, from the three parties involved within the exercise referral scheme. The use of a grounded theory methodology (see Section 4.2.1) enabled the development of each framework through a number of techniques (see Section 5.5.1). Each frameworks structure is depicted in a model (Figure 6.1, 6.2, 6.3), the themes are explained using quotes from participants and links to literature are highlighted to aid comprehension and insight. A final summary discussion is presented to reveal the communalities and differences between the three frameworks presented (Section 6.4). A model combining the three perspective is represented in figure 6.5.

6.1: Patients - part 1

Table 6.1.1 displays the descriptive data for the patients involved in the four focus groups.

Table 6.1.1

Descriptive Data for Patients Involved

<i>Name</i>	<i>Age</i>	<i>Gender</i>	<i>Focus group</i>	<i>Ethnicity</i>
Chris ⁴	32	Male	1	White British
John	54	Male	1	White British
Sarah	49	Female	1	White British
Lydia	55	Female	1	White British
Rachel	68	Female	1	White British
Aarsi	68	Female	1	Indian
Kate	65	Female	2	White British
Jo	63	Female	2	White British

⁴ Pseudonyms are used throughout the thesis to refer to participants

Fiona	35	Female	2	White British
Mark	64	Male	3	White British
Geoff	44	Male	3	White British
Lara	56	Female	4	White British
Hanna	67	Female	4	African
Diane	58	Female	4	White British
Vikki	62	Female	4	White British
Elizabeth	31	Female	4	White British
Sasha	58	Female	4	Asian

Figure 6.1 presents the conceptual framework in diagrammatic form. The characteristics of each theme and their links to other themes are explained in Table 6.1.2 and in the text where appropriate.

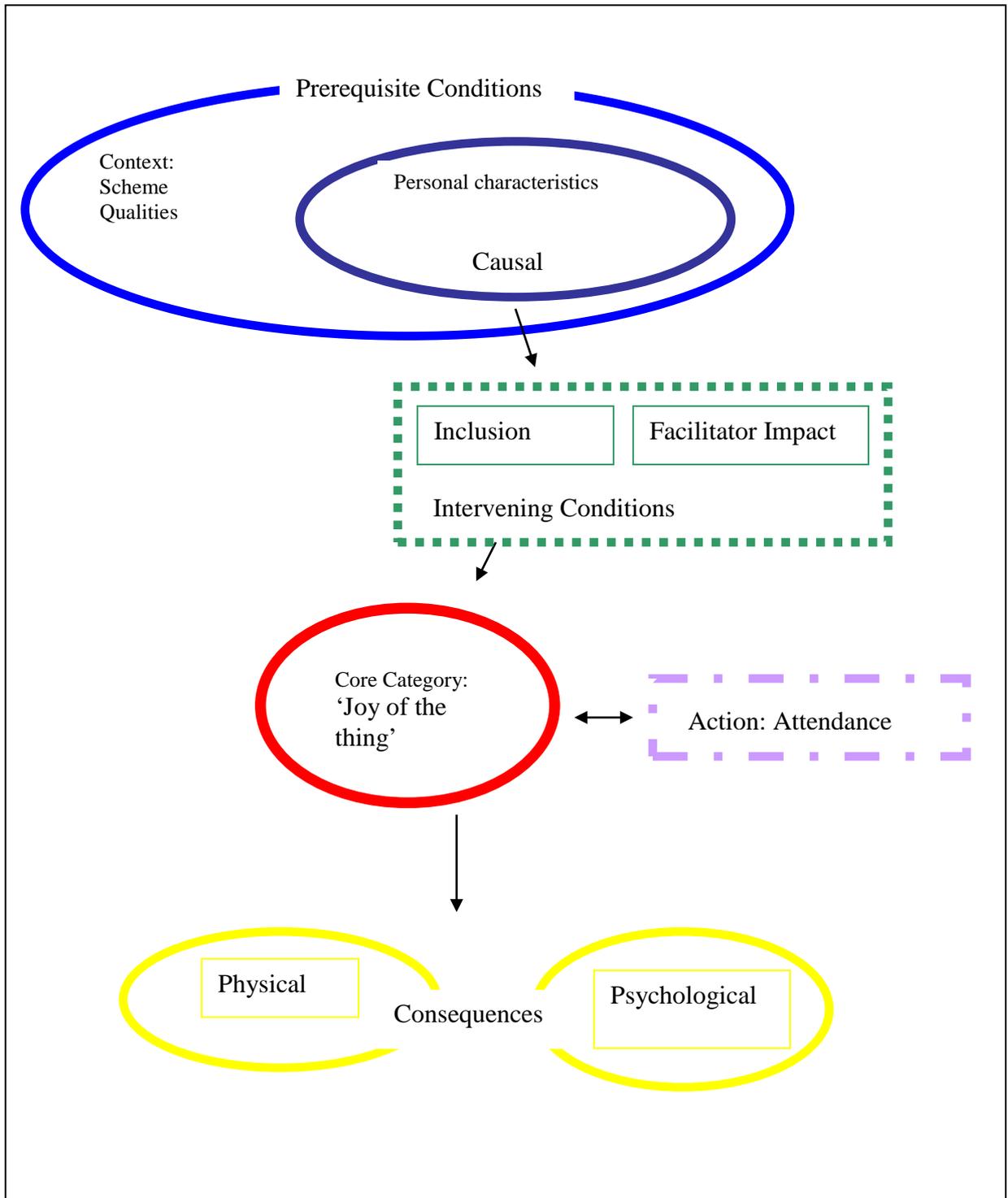


Figure 6.1: Conceptual Framework Explaining Success from the Perspective of the Patients within ERS.

Table 6.1.2

Types and Explanations of Themes from Patients

Types of themes/categories	Explanation	Theme in this research	Properties
Core Category	Represents what is central to the research	'Joy of the thing'	Motivation Enjoyment
Conditions - 3 types; 1. Causal	Events/happenings which influence the phenomena	Personal Characteristics	Level of self-efficacy Level of desire
2. Contextual	Set of conditions that intersect at a time and place which create a set of problems which people respond to through actions/interactions	Scheme Qualities	Safety Flexibility Financial
3. Intervening	Conditions that alter the impact of the causal conditions on the phenomena	Inclusion	Environment Apprehension Social acceptance
		Facilitator Impact	Personalised
Action/interactions	Purposeful acts that are undertaken to solve a problem and in doing so shape the phenomena	Attendance	Taking Part
Consequences	Range of outcomes	Physical Outcomes	Functionality Pain reduction Appearance
		Psychological Outcomes	Knowledge Feeling good Confidence

Components of the core category

The discussions surrounding the participant's concept of success led to a number of findings. The concept of success was the intended phenomenon for discussion within the focus groups. Initially success was considered to therefore be the core category of the findings. However, further interrogation of the data revealed that within success the patients valued the satisfaction and pleasure derived from taking part. Success was therefore broken down into its components parts to explore the concept more fully as perceived by the patients. 'The joy of the thing' was chosen as it encapsulated the essence of this category from the words of the patients themselves. Further questioning of the data exposed that the other major categories were related to the 'joy of the thing' reinforcing its position as the core category.

These findings are considered in terms of the prerequisites for experiencing the core category, what the core category involves and the consequences of it. In line with grounded theory (see Section 4.2.1) after the core category was identified, a literature review was conducted to examine whether or not existing literature could help clarify the understanding of the emerging themes (Charmaz, 2006).

Central to this core category was the importance of feeling good and enjoyment of the scheme. In essence this captured the satisfaction and pleasure that was derived from participating in the scheme. The 'joy of the thing' contributes to the perceived outcomes of the scheme, such as confidence. This condition is central to their experiences and as such is the core category in the model (Figure 6.1). The core category represents the pivotal condition, whereby prerequisite conditions lead to it and consequences arising from it. The residual themes are connected through the 'joy of the thing', which acts as the anchor for the participant's perspectives; *'John: It should accentuate the fun, health benefits, the gains, the joy of the thing really as actually when you come out you feel good'* (FG1, 335). Properties of the joy of the thing incorporate a sense of achievement and feeling proud; *'Kate ...and I feel proud, I feel proud of myself and that to me is my success'* (FG2, 94).

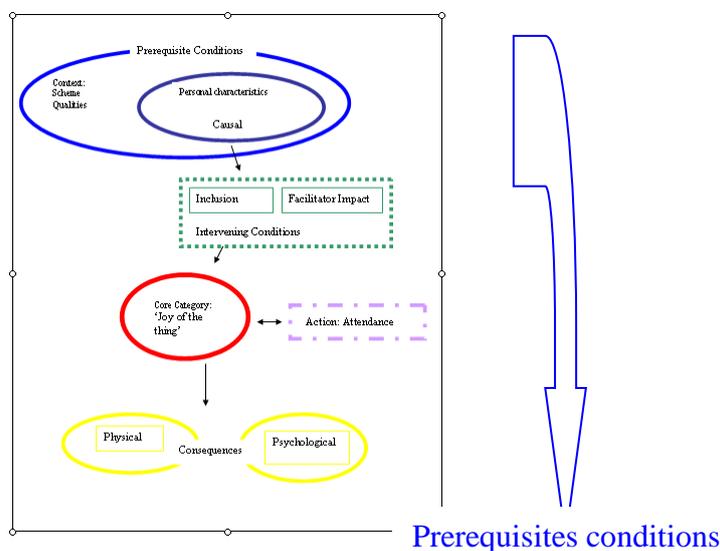
The 'joy of the thing' theme corresponds to intrinsic motivation where individuals enjoy the process of engaging in the activity (e.g. exercising because it is fun) rather than due to outcomes that may be associated with it (e.g. weight loss) (Deci & Ryan, 1985). Self determination theory considers autonomy, competence and relatedness essential to intrinsic motivation (Ryan & La Guardia, 2000). The setting provided by the exercise referral scheme in this research provides the incorporation of these factors and other contributing factors within a unique model (Figure 6.1). The concept of competence from SDT is reflected in the scheme qualities prerequisite factor. This highlights the exercise opportunities, through the flexibility for the patients to attend sessions and feel safe enough to take part and thus demonstrate their capabilities. The SDT notion of relatedness is reproduced within the intervening condition inclusion, which is characterised by feeling connected and part of a group. The impact of the facilitator also provides input in this manner and can serve to help or hinder the extent to which the 'joy of the thing' is experienced. Factors in the social environment that fulfil the needs for autonomy, competence and relatedness have been shown to facilitate intrinsic motivation (Vallerand, 2001). In order to facilitate the 'joy of the thing' the prerequisite conditions and intervening conditions need to be satisfied. Furthermore, it is recognised that differences in the degree to which these conditions are supported may lead to differences in the extent to which the 'joy of the thing' is experienced by the participant. Previous research has shown that individuals who exercise due to this enjoyment are more likely to adhere to their exercise programme over time and therefore derive health benefits through becoming more physically active in the long term (Wankel, 1993). Furthermore, it has been suggested that extrinsic motives are more important in the early stages of behavioural change, whereas enjoyment is important for progression to becoming a regular exerciser (Hagger & Chatzisarantis, 2007). It therefore appears that as these patients had been involved in the scheme for some time that intrinsic motivation was evident.

It is however possible for a participant to experience the scheme without experiencing the 'joy of the thing' but this is likely to limit positive consequences that may be experienced from taking part in the scheme for example a marked increase in confidence. Interestingly patients may prefer how it makes them feel after a bout of exercise, rather than experiencing the 'joy of the thing' at the time of participation; '*Geoff: I don't enjoy going to the gym, but the day after I feel a difference*' (FG3, 71).

In previous research this dislike of exercise has been identified as a motivational barrier to taking part (Clarke & Eves, 1997). However it would appear that if there are other outcome benefits to be derived such as ‘feeling a difference’ then this may not have to result in total inactivity. The dimension of the core category experienced by the participant is dependent on causal (happenings that influence the core category) and contextual conditions (set of conditions that intersect at a time and place creating problems for people to respond to through actions)(Strauss & Corbin, 1998). Intervening conditions may mediate the impact of these influencing themes.

Conditions leading to the ‘joy of the thing’

Understanding the conditions leading to and surrounding the patients experiences of the ‘joy of the thing’ will provide the gateway for understanding how patients experience the core category. The prerequisite conditions shown in Figure 6.1 combine to create the context in which the participant may experience the ‘joy of the thing’.



Causal Condition: Personal characteristics lead to the occurrence of the core category
Properties: Level of self-efficacy and level of desire.

Contextual Conditions: Scheme qualities represent the location of events that affect the core category.
Properties: Flexibility, and the need to feel safe, and financial considerations

Figure 6.1.1: Explanation of Prerequisite Conditions for Patients

The prerequisite condition **personal characteristics** is a causal theme to the core category, therefore it is these characteristics that will lead to the occurrence of the core category. These characteristics influence the participant's actions, for example a lack of desire may lead onto a response such as a decrease in attendance. The properties of this prerequisite condition are this level of desire and self-efficacy of the participant (see Table 6.1).

Self-efficacy has been defined as beliefs about one's ability to perform a specific action (Bandura, 1977). In this case the action is adhering to the scheme's requirements. Bandura's (1997) more recent and refined definition of self-regulatory efficacy appears appropriate as this refers to efficacy relative to challenges to successful behaviour, such as barriers to attendance. The causal influence of self-efficacy has been highlighted by previous research. It has been shown that self-efficacy has an important role in predicting exercise behaviour (McAuley, 1992). There are four primary sources of efficacy information: mastery experiences, social modelling, social persuasion and interpretations of physiological arousal. Self-efficacy is considered to be a dynamic construct susceptible to change as a function of individual information processing (Bandura, 1986). The level of self-efficacy of the participant varied across the course of the scheme; self-efficacy increased through familiarity with other people, the surroundings, such as the equipment, and the procedures, for example being aware of what takes place in a reassessment session. It would appear that without the scheme, and its supportive nature, patients would not have the confidence to attend a leisure centre; *Joanne: 'You see I would never have gone to a gym on my own, you hear so many horror stories' (FG2, 60)*.

There appeared to be a drop in self-efficacy levels when faced with a change, or a barrier, in the path of the participant, such as, for example, a very busy facility. Maintaining physical activity with the frequency and intensity recommended during the scheme is a complex task. Such a task requires self-efficacy not only to perform the exercise tasks but also with respect to being able to reschedule and reorganise daily life in order to make time to exercise (McAuley, Pena, & Jerome, 2001). In order to manage these barriers the patients may decide not to attend the facility thus avoiding the situation. This safety behaviour may reduce the short term anxiety felt by

the participant but reliance on it may prevent the participant from achieving longer term change (Gelder, 1997). Past performance accomplishments are the most dependable and influential sources of efficacy information (Bandura, 1997), therefore a previous failure will decrease the patients self-efficacy. As a consequence attendance levels would decrease, or the patient may drop out entirely. Furthermore a substantial decline in self-efficacy also appears to happen at graduation (completion of the scheme), which subsequently leads to an increase in apprehension; *Kate: 'I only live across the road and its not that physical distance, it was the mental, getting out of the door, getting across there, it was losing the confidence in myself'* (FG2, 162) (after graduation). At graduation the facilitator is no longer in control of the participant's progress, leaving the participant to continue without this support. As the instructor has been shown to provide social modelling and social persuasion information, which are sources of self-efficacy (Beauchamp et al., 2007), this may explain the subsequent drop in self-efficacy perceived by the participant. The full potential impact of this change is unmistakable from one patients discourse; *Kate: 'To be fair, I think it is hard to keep the motivation up when you first, I mean I went home and sobbed when Emma first said I had graduated, I suppose for me it was emotional as well it was a real wrench and not long after I also had that with my therapist and its that removal of the support and personal I suddenly felt really alone I felt very vulnerable again and I think I remember seeing Emma again a couple of times as she was walking past she would ask how I was and then I would not go and have a mini break down again and occasionally she would phone me again. It was stop, start, stop start and I was very much in danger of not coming back'* (FG2, 162).

Level of desire is also a property of the personal characteristics theme. Each participant will have something that has motivated them to make a change; these factors appear to modify over time, and with experience, such as exercise for purely health reasons, to exercising to meet up with friends. The action resulting from high motivation is regular attendance and making the most of the scheme, assuming there are no insurmountable barriers. If the participant is faced with barriers and is unable to attend for a period of time, inadequate coping skills may result in guilt and a perceived loss of control, which could then lead to a relapse (Sniehotta, Schwarzer, & Scholz, 2005). Low motivation appears to result in the patient dropping out from the

scheme, or doing the minimum required; *Rachel: 'I haven't come along to the group sessions yet, I think its motivation'* (FG1, 187).

A certain level of motivation is therefore needed to attend the scheme, however in order to successfully accomplish as much as possible, the level of motivation needed has to be maintained or increased. The level of motivation for each participant is therefore not stable; it varies over time and with experience. The sources of motivation, competence and relatedness will change with familiarity with the environment and people respectively. For example, the following quotation provides an example of a participant who has knowledge and experience of the scheme which provides her with the level of motivation to attend even when she has other life events that take precedence; *Kate: 'If I am having a particularly bad week or month or day I have got it there (the scheme) and I do go even if its just once a week'* (FG2, 86).

Scheme qualities is a contextual theme and forms part of the prerequisite condition for the 'joy of the thing'; it represents the location of events and incidents that affect the core category 'the joy of the thing'. The properties of this contextual condition include flexibility, and the need to feel safe, and financial considerations. The property of flexibility refers to the running of the scheme, such as the options provided (i.e. the different exercise modalities/times that are available) and the schemes ability to adapt to the patients requirements, such as flexibility as to when they can attend. According to patients without these options, positive outcomes would be harder to achieve; *Sarah: 'I think the fact that you can come when you want to, I mean I come at half past nine in the morning'* (FG1,115).

The flexibility of the scheme to cope with the differing ability of patients is also valued and seen as beneficial by patients. Each individual can work at their own pace which is appropriate to their needs and their current state of fitness; *Joanne: 'This Movewise,(name of the exercise class) this circuit thing on a Tuesday is excellent, you see everyone goes at their own pace, everyone is at a different level'* (FG2, 162). The schemes flexibility to accommodate partners and friends is noted in the patients discourse as assisting their ability to attend and succeed; *John: 'It's the flexibility that we can come together'* (with partner) (FG1, 193). Perceived social support for physical activity from friends and family has been shown to affect exercise adherence

by influencing self-efficacy beliefs (Bandura, 1997) Accommodating this preference to attend with other people allows the patients to receive social persuasion in the form of encouragement and support therefore bolstering their self-efficacy. This may well decrease their apprehension regarding the experiences because they feel more relaxed sharing the experiences with someone that they have an established relationship with.

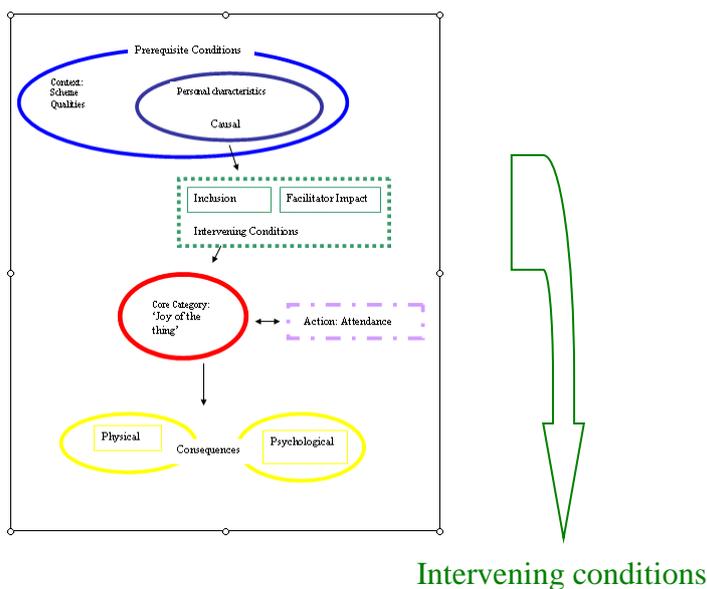
Another property of the contextual condition scheme qualities is feeling safe and secure. Feeling safe and secure gives the patient the confidence to carry out the necessary exercises (on their programmes), for example, knowing that someone qualified is present throughout the sessions as this limits their apprehension and fear about coming to any harm in the session.

Previous to being in the scheme, John had a cardiac event and was thus very aware of his health problem and potential risk. He felt unsure about what he should be doing, however his confidence in the staff assisted him to overcome this concern; John: *'To be honest, once you have been lying there with your heart in your hands, you don't know what you should be doing actually. These guys are saying, very clearly 'it's fine, it's safe and I will do it with you'* (FG1, 43). Having this confidence in the expertise of the staff allows the persuasive techniques used by the facilitator to be effective and aid the self-efficacy of the participant.

This safe environment is also reassuring to patients; Lydia: *'I like someone there to be watching what I am doing'* (FG1, 105). Patients feel secure in the knowledge that they will not come to any harm, therefore providing them with the confidence to take part. This feeling of safety arises from the knowledge that patients have been properly tested and screened prior to exercise. For example, through blood pressure and heart rate monitoring, they felt confident that their medical status was appropriate for participation in exercise. For example, one participant noted how the facilitator had a thorough understanding of her specific condition; Lara: *'Yes I know she has got a lot of information on Parkinson's too, because of me'* (FG4, 199). Feelings of safety also come from the knowledge that the equipment is suitable and reliable. It appears fundamental that the facilitator is providing attention and advice to the participant within the session, for the property of safety to occur. According to self determination

theory this form of facilitator input may fulfil the need for relatedness as the participant feels connected and cared for by a significant other (Deci & Ryan, 2000).

Financial is another property of the contextual condition; this can lead to problems that the patients will need to overcome in order to continue attendance. The patients mention financial issues as a difficulty to maintaining attendance; *Geoff: 'I started off at eleven fifty, it then went up to fifteen eighty odd and I think it goes up to around eighteen I'm told and then to be honest after that I might have to give it up as I cant afford it'* (FG3, 115). Lack of available money has been previously identified as a barrier to long-term physical activity (Reichert, Barros, Domingues, & Hallal, 2007).



Facilitator impact mediates the patient's experience and can act to assist or contain the patient's attendance
 Properties: Personalised

Inclusion the level at which this is perceived can hamper or facilitate attendance
 Properties: Environment, apprehension and social acceptance

Figure 6.1.2: Explanation of Intervening Conditions for Patients

The **impact of the facilitator** is an intervening theme; this theme mediates the patients' experiences and acts to assist or constrain their attendance (Figure 6.1.2). The influence of the facilitator is wide ranging because they provide the information and guidance regarding the 'when', 'where' and 'how' to exercise. The facilitator also provides personalised support and encouragement to the participant and this can influence levels of self-efficacy through praise, advice and transfer of knowledge, helping the patient to feel they are exercising effectively. This attention impacts on the property of the scheme qualities theme safety, as the patient will then feel secure in the task they have been asked to undertake. The impact of the facilitator appears to influence directly the attendance of the patients; *Diane: 'the numbers have kept up because she's so good, it's to her credit'* (FG4, 57). The personalised, individualised attention of the facilitator is acknowledged in the discourse as an influential property of the facilitator impact; *John: 'They are dealing on mass but it's personal, which is fantastic'* (FG1, 35). Biddle and Mutrie (2001) state that exercise leaders are almost certainly important individuals in helping exercisers maintain participation. Previous research into ERS has also found the attitude and approach taken by the exercise leader was crucial for maintaining adherence (Wormald & Ingle, 2004). The patients refer to the facilitators as both a source of motivation and a support; *Diane: 'She knows peoples names and she gets to know what you can do she pushes you that little bit more'* (FG4, 63). Social support has been identified previously, and found to be influential for patients to progress through programmes and enhance their subjective experiences of them (Carless & Faulkner, 2003; Crone et al., 2005; Hardcastle & Taylor, 2001). However, if the participant is too reliant on the social support provided by the facilitator they may in fact not be in control and therefore be lacking in autonomy and limiting their self-determination. Social support and a sense of self determination have been shown to be interrelated in this manner (Coleman & Seppo, 1993).

Inclusion was another intervening condition and is characterised by feeling part of a group and having friends within the scheme. The dimension of inclusion, i.e., the degree of inclusion, was influenced by factors such as the other scheme patients, other exercisers, staff, and the surroundings. The perceived level of inclusion can either facilitate or hamper the attendance levels of the participant. Three properties of inclusion are evident which include the environment, apprehension and social

acceptance. One example of the environment as an influence refers to patients noticing other exercisers and their perceptions of themselves, in comparison to them; *Rachel*: 'When you go to other gyms and they are prancing around in leotards, it is off putting if your are not as slim as they are' (FG1, 129) and *Kate*: 'Being surrounded by blokes and muscles Marys and all the stereotypes and skinny women and fit people' (FG2, 56). This social environment can influence social physique anxiety (SPA), the anxiety experienced when one perceives others to be negatively evaluating one's physique (Hart et al., 1989). The emphasis on the female form in exercise settings may foster feelings of SPA, constrain enjoyment and may even be exacerbated by the nature of the clothing required (Krane et al., 2001). When asked what was the most nerve racking thing about the scheme two females patients responded regarding clothing; *Sarah*: 'It's the first time and going to the gym, see I never wear trousers'. *Lydia*: 'Nor me always skirts' (FG1. 40). This initial need to change the type of clothing worn was difficult for these patients.

Research has shown that in a sample of overweight female exercisers, the primary reason for avoiding exercise in social environment was this anxiety associated with being evaluated by others (Bain, Wilson, & Chaikind, 1989). Furthermore a study into Social Comparison Theory found that if it was upward comparison (i.e., comparing oneself to someone who is better off on the dimension of interest) it would result in decreased well-being (R. H. Smith, 2000). Such comparisons therefore have the potential to mediate the extent to which the 'joy of the thing' may be experienced.

This aspect of the environment, and people's perception of it is linked to the property of apprehension, as apprehension increases as a result of anxiety experienced. Apprehension is characterised by feeling uncomfortable coupled with a sense of unease and nervousness. These feelings appeared to be related to the type of user who was in the facility at the time. Patients felt more comfortable when a wide variety of people were present in the exercise environment; *Rachel*: 'There are all shapes and sizes here, basically you don't feel uncomfortable' (FG1, 133). The variety of sizes appears to allow the patients to feel more included instead of excluded from an environment of purely slim, fit exercisers. Fox et al. (1997) found comparable findings that older patients felt uncomfortable when around an environment of predominantly young vigorous exercises. It would appear that patients do observe

others and make judgements about themselves and whether they fit in. These judgements influence how they feel in terms of relatedness therefore limiting how integrated they feel in the social environment and ultimately their self-determination to continue.

Apprehension can also be experienced by uncertainty surrounding an unfamiliar, perhaps uninviting, environment. Furthermore participant's feelings regarding the environment differed between the various leisure centres involved;

Diane: 'this gym is ok but it's not as good as the Fortan, which is much more state of the art, the whole place is smaller' (FG4, 85)

Lara: 'You get to know more people (at the Sandmesh leisure centre)' (FG4 86)

Hanna: 'Yeah I feel out of my depth at the Fortan I really do' (FG4 89).

It was evident from this dialogue that the atmosphere and level of apprehension differed between leisure centres. The Fortan Leisure Centre was praised for its level of sophistication and its size. Although the merits of this were acknowledged it was in fact these factors that appeared to intimidate the patients, increasing their level of apprehension. Unease with these physical aspects of the environment indicate that the patients do not feel it is suitable for them; this apprehension then infringes on their level of self-determination as the daunting environment reduces their feelings of competence. An environment that is over challenging in this way is likely to disrupt the feelings of competence and therefore hinder internalisation and self-motivation, which may have a negative impact such as psychological withdrawal (Deci & Ryan, 2000). This may intervene and hinder the participant's ability to experience the 'joy of the thing'.

An inappropriate environment is related to the background music. Patients express that the music played is deemed unsuitable in terms of both the volume; *Geoff: 'some of the neighbours I know have left a local leisure centre simply because the music is*

so loud' (FG3, 167) and the type; *Mark: 'I don't bother with them (headsets) as most of the music is terrible anyway'* (FG3, 165). This may subsequently limit their inclusion into the environment and ultimately limit their experience of the core category.

Patients apprehension levels may differ depending on the time spent on the scheme. For example, there are two time points where this is at it's highest, the initial session is often coupled with intense feelings of apprehension; *Lydia: 'should I turn up? should I go? that's what you think'* (FG1,61). This is likely to be due to patients being unsure about what to expect from the session and being wary of the new environment. However, when the patients are deemed to have graduated, this also leads to a perceived increase in apprehension. This appears to be triggered by a change in situation and in the level of support provided. For example, graduation leads to the participant changing from the facilitator they have had up to this point, to being considered a regular facility member without the individualised support that the scheme provides. Hardcastle and Taylor (2001) have recognised the importance of the exercise provider in providing social support and in providing a sense of security. Social support has also been shown to lessen apprehension within a mental health population (Crone, 2007). Apprehension is affected by graduation, this is evident from the following conversation where two patients discuss what it felt like to graduate from the scheme and move to the next stage where the facilitator is not being involved;

Joanne: 'She said I would then move on and see someone else. And when she said this to me it was a mixed thing as you thought 'wow' and 'oh, you are not going to be taking me anymore', that was something I found' (FG2 118)

Kate: 'Scary? I was petrified' (FG2 120).

Graduation, and the awareness that this means moving onto the next stage of the scheme, can result in patients experiencing strong emotions; *Kate: 'To be fair, I think it is hard to keep the motivation up when you first (graduate), I mean I went home and sobbed when Emma first said I had graduated'* (FG2 141), quite in contrast to the

experiences expressed in the 'joy of the thing' theme. The patients appear to experience a form of fear at this time; a painful emotion experienced as a result of impending apprehension or anxiety (Ogden, 2000). Having formed a trusting relationship with the facilitator the apprehension of this loss causes feelings of fear. Graduation may be considered as a form of success as it signifies moving on from the scheme to the next phase. However, using the terminology 'graduation' may result in the patients perceiving the end of something. This perception appears to result in the patients feeling scared at the prospect of change and control being handed back to them.

As a consequence of this support being removed the possibility of drop out appears to be heightened at these time points, as the participant has to once again, similar to commencing, demonstrate determination to continue through these periods as Kate's quote above suggests. The social support provided by other scheme members in group gym sessions and classes is however still in place, and may become more important due to the lack of the facilitator support. A social network facilitates social support, having social opportunities built into the scheme assists the development of the social network and results in a sense of belonging (Crone et al., 2005). According to Caldwell and Smith (1988) if the participant feels embedded in a social network they are more likely to perceive that in times of crises they will be supported. Furthermore, the ability to continue appears to be aided by feelings of social acceptance; *John: 'If it's supported by a pleasant and friendly environment then you get a pleasant experience, why wouldn't people come back'* (FG1, 122).

The final property, social acceptance, can be obtained from a variety of sources. This property is defined by familiarity with other people, feeling part of a group and being socially supported. It seems apparent that friends within the social context are considered an important element of the perceived social acceptance; *Lydia: 'The people you meet too, made so many friends and we get on well with everybody'* (FG1, 105).

Comments regarding the importance and enjoyment of the social side emerged from group classes. The gym area, where people exercise independently, however, was described as an area that is not conducive to making friends. *Joanne: 'You see, the*

gym is a lonely place, I mean I actually probably talk to people more than I should, but you walk into a gym and nobody talks to anybody. The staff get to know you and smile at you, but you see the same people day after day or week after week, and nobody talks to you or even acknowledges you' (FG2,162). The gym area is set up with individual exercise stations that are spaced apart. Gym users often also wear individual headsets to listen to music. These factors appear to create an atmosphere whereby it is harder to engage in conversation with other users and thus considered a lonely place to exercise in. Different experiences regarding social acceptance are therefore possible from elements of the scheme, which is dependent on how the scheme is utilised. Patients on the same scheme may experience different levels of social acceptance depending on whether they predominantly chose to attend the gym individually and use the equipment, or the group circuit classes, where interaction is more common.

The external environment, i.e. where the leisure centre is situated in the borough, is also closely linked to levels of apprehension regarding attendance to the scheme; Vikki: *'I don't like walking around, not out and about round here'* (FG4, 159). This led to the patients adapting their attendance so that they could deal with this issue by strategies such as obtaining a lift, particularly at night or in the hours of darkness. This is supported by Kilgour (2007) who found that women would adopt safety strategies, such as being active with a friend/partner, or finding an alternative form of transport when faced with environmental barriers when travelling to the place of exercise. These issues were only mentioned by the female patients who appeared to feel safer travelling to the leisure centres during the day. Hanna: *'I mean I get a lift I don't think I would otherwise'* (FG4, p169). Thus these issues are factors that influence the level of inclusion as some patients felt they could not attend evening classes because of the barriers provided by the physical environment. Research has demonstrated that significantly more women provide psychosocial (leisure centre deemed unsuitable, not ready to exercise in public) reasons to explain their removal from an exercise scheme (L. H. Johnston, Warwick, De Ste Croix, Crone, & Sidford, 2005).

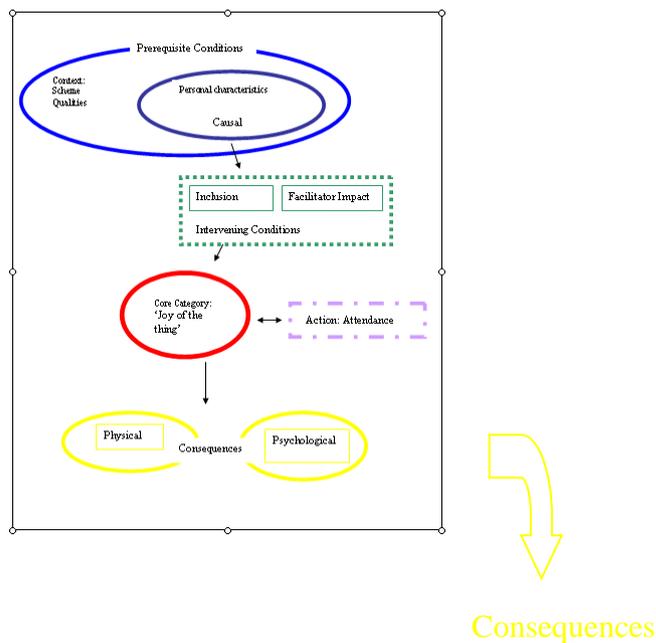
Attendance; action strategy

The action strategy **attendance** involves the extent to which the patients take part and utilise the scheme. Participants use this to manage and handle the challenges/barriers that may obstruct success and these strategies help to facilitate the core category, the 'joy of the thing'. When faced with problems such as low levels of self-efficacy or environmental barriers, the action strategy may be to avoid the challenge and drop out of the scheme entirely. The dimension of the strategy allows a gradient of responses. For example, the patient may only attend the minimum required of the scheme protocol when faced with a problem or barrier. In practice this could result in a participant just attending the initial appointment, reassessments and the minimum of exercise sessions. However, if the participant has high levels of self-efficacy and motivation they can respond with attendance to all that the scheme has to offer. This may involve attending a variety of sessions such as group gym sessions, group exercise and independent gym sessions as often as is possible; *Hanna: 'I find this is my level now I can come to aqua twice a week I find I am comfortable with this'* (FG4, 260). The options, availability of sessions and flexibility of the scheme can also impede the level of attendance possible; *Sasha: 'We have been trying to get one on Friday morning'* (an extra aqua class) (FG4,147). Furthermore a referral reason such as a pulmonary condition can directly impact on attendance; *Geoff: I mean the exercise I am doing is limited entirely by my breathing* (FG3, 159). This type of condition can limit the attendance and extent to which the exercise options are used by these patients. Both medical and psychosocial reason has been stated by previous research as reasons for patient drop-out from schemes, demonstrating how these factors can influence the decision to attend (L. H. Johnston et al., 2005).

Consequences resulting from attendance

Two consequence themes emerged from the research (Figure 6.1.3), **physical outcome** and **psychological outcomes**. The physical consequence theme refers to mobility and other physical outcomes that occur as a consequence of taking part in the scheme. The outcomes associated with participation depended largely on the

participant's experiences throughout the scheme. There are a number of properties of this theme, which include appearance, functionality and pain reduction.



Physical outcomes occur as a consequence of attending and taking part the scheme
 Properties: Functionality, pain reduction and appearance.

Psychological outcomes occur as a consequence of attending and taking part in the scheme.

Properties: Knowledge, feeling good and confidence

Figure 6.1.3: Explanation of Consequences for Patients

The property appearance refers to how patients perceive themselves physically as a result of involvement in the scheme. This is often referred to in terms of weight and toning, although since not all the patients were referred for specific weight issues this is often an associated consideration; *Hanna: 'It's rather slow mind you, with the exercise programme I find, weight wise, but I have toned up beautifully'* (FG4, 11). Appearance issues are also discussed as a goal, or a reason to succeed, as well as an element of success; *Hanna: 'But I know at the end of two years where if I hadn't been*

coming to these classes I would be worse off as I would be more overweight' (FG4 113). Previous research with patients of ERSs has noted the changes in body composition as an outcome of participation (Crone et al., 2005).

The property functionality refers to the mobility of the patient. Functionality maybe in terms of either carrying out everyday tasks or an improvement in function, regarding exercise; *Sarah: 'When you can do things that you couldn't do before'* (FG1, 177). An improvement in functionality is an outcome, which is achieved by attendance to the scheme; *Joanne: 'At the end of the day now at this particular point I cant believe what I can do, compared to what I could'* (FG2, 32)

This property, and that of appearance, are closely linked to weight, as weight loss or gain can influence both functionality and appearance issues. Outcomes of functionality are very individual and they can be small but significant accomplishments to the individual; *Lara: 'Think I have done quite well considering my balance was going and this wouldn't stop'* (holds out shaky hands) (FG4, 9).

A further closely linked property is that of pain, or its reduction, which was seen as an element of success and also a motive for attendance. Some patients, as a consequence of having taken part experience pain reduction; *Geoff: 'It used to be limited by what I could do aches and pains'* (FG2, 135). The reduction of pain as a consequence of physical activity has been previously shown with people with osteoarthritis (Reilly, Muir, & Doherty, 1999).

The psychological outcome theme, involves a number of properties, including gaining confidence, knowledge and feeling good. Gaining confidence provided patients with energy; *Lydia: 'I have got so much more confidence now, more energy'* (FG1 179). Previous research has provided support for psychological outcomes of exercise. Specifically self-efficacy and overall well-being have been shown to significantly improve as a result of physical activity (Biddle & Mutrie, 2008; Netz et al., 2005; Saxena et al., 2005; Stathi et al., 2002). Research into exercise referral has also found confidence to be a noted outcome (Wormald & Ingle, 2004).

This increase in confidence assists the patient in utilising and making the most of the scheme; *Kate: 'I know the staff there and they know your faces and say hello, I even started doing circuit training. There is that confidence and even using that scary pull up machine in the middle!'* (FG2, 90). This confidence can be global, resulting in feeling more positive regarding many aspects extending from the exercise domain; *Joanne: 'I remember thinking originally that I would expect to come out of the gym feeling completely knackered, but you don't, you come out feeling you can conquer the world, that is a surprise'* (FG2, 138). This counterintuitive impact of exercise has been shown from previous research which details the increased feelings of energy and reduced feelings of fatigue that are possible from exercise (Puetz, O' Connor, & Dishman, 2006)

Confidence is linked also to knowledge. The property of knowledge can be explained as an increase in the understanding of health, physical activity and how to exercise effectively. This form of knowledge links to previous performance accomplishments. These accomplishments are considered the most effective way of creating a strong sense of efficacy (Bandura, 1994). This knowledge increases over time and arises from a number of sources, for example directly from the facilitators. Joanne in her discourse mentions how she would never have previously attended alone; *Joanne: 'Unless someone shows you, um you don't know what machines to use, what's good for your particular problem or what's definitely very bad for your problem'* (FG2, 60). An increase in knowledge may not have a direct influence on behaviour, however coupled with a change in values the patients hold, may in fact contribute to subsequent behaviour change (Davenport & Prusak, 1998).

However, kinaesthetic feedback; *John: 'you can't tell people you have to feel it'* (FG1, 241) and the environment; *Diane: 'For all the stuff on TV about weight management I found the programme they actually use to be very helpful'* (FG4, 95) appears to provide knowledge. This increase in health knowledge appears to support the confidence levels of participants; *Diane: 'Well I would still carry on I think I know enough about it now to do that'* (FG4, 302).

Feeling good is a property of the psychological outcomes. This incorporates the enjoyment and satisfaction that arises as a consequence of involvement in the scheme;

Kate: 'Even if you can't skip, you have a skip in your step when you walk out of the gym' (FG2, 136). Chris: 'You feel good' (FG1, 359). Enjoyment and a sense of satisfaction have also been previously highlighted in qualitative research as positive mental health benefits from participation in exercise (Crone et al., 2005). This is supported by Wankel (1993) who indicated the importance of enjoyment for adherence and to derive benefits from exercise.

This positive reinforcement from the experience is an important factor in motivating the patients to continue with exercise. Motivation itself is a valuable consequence of attendance, which incorporates determination and enthusiasm from the patients;

Diane: 'That's what we come in here to avoid, not giving up without a struggle!' (FG4, 47).

Fiona: 'Well I will carry on as long as I am able, definitely' (FG2 ,214).

The consequences of success extends from the domain of exercise, leading to increased motivation and renewed inspiration for life; *Kate: 'I would say it is not just the physical exercise, you are getting people out of the houses you are getting people motivated and inspired' (FG2 ,178).* This feeling of well-being and being energised has been supported by research. The 'feel-good effect' was addressed by a recent publication (Biddle & Mutrie, 2008). Following a review of the evidence on physical activity and various indicators of psychological well-being including; mood, self-esteem and enjoyment, it was concluded that positive effects for exercise were shown across diverse methods of investigation (Biddle & Mutrie, 2008).

Conclusion

In conclusion the conceptual framework that has emerged from this research centres on the core category of the 'joy of the thing' (Figure 6.1). The personal characteristic theme was seen as a causal condition and would therefore influence the core category. Scheme qualities, a contextual condition, provided a set of conditions which intersect to potentially cause problems for the participant to cope with using an action strategy. The inclusion and facilitator impact themes were intervening conditions and thus act to either assist or constrain the action strategy, attendance. Patients through this action

strategy, attendance, coped with these themes. The impact of this action and preceding themes influences how and to what extent the core category is experienced.

Ultimately this influences the potential consequences of participation within the scheme (Figure 6.1). Whilst some of the findings within this model echo previous research in this area, the model presented is unique in that it incorporates collectively, in this context, the themes surrounding, and influencing, participant's perceptions of success.

6.2: Facilitators –part 2

This section depicts the findings from the interviews with the facilitators of the scheme. Table 6.2.1 shows the descriptive statistics for the facilitators interviewed.

Table 6.2.1
Descriptive Data for Facilitators

<i>Name</i>	<i>Age</i>	<i>Gender</i>	<i>Ethnicity</i>
David	30	Male	White British
Emma	50	Female	White British
Yvonne	26	Female	White British
Zoë	28	Female	White British

This section presents the conceptual framework from the analysis of the facilitator interviews (see Section 5.3 for details). Figure 6.2 represents the conceptual framework in diagrammatic form. The characteristics of each theme and their links to other themes are explained in Table 6.2.2 and in the text where appropriate.

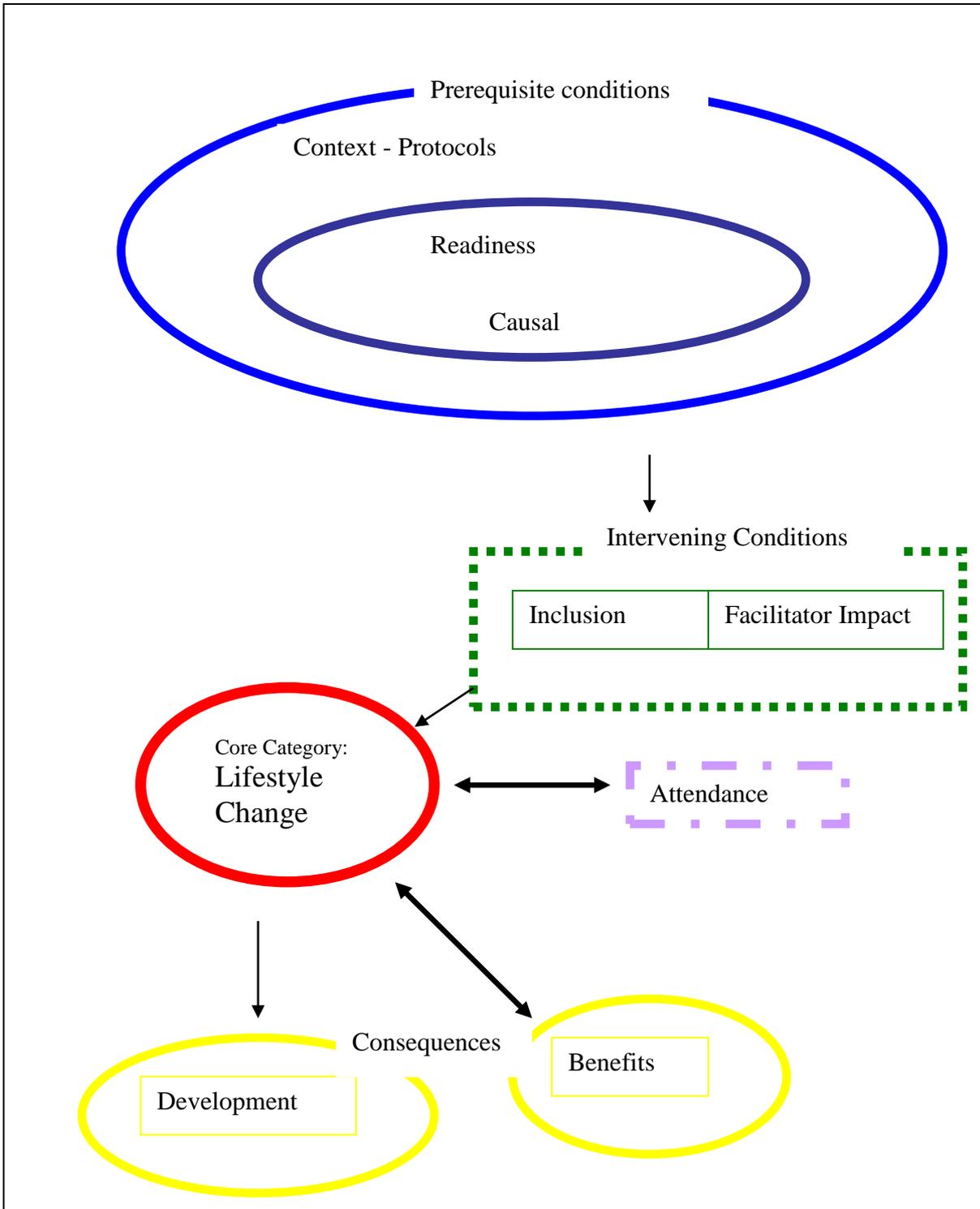


Figure 6.2: Conceptual Framework Explaining Success from the Perspective of the Facilitators within an ERS.

Table 6.2.2
Types and Explanations of Themes from Facilitators

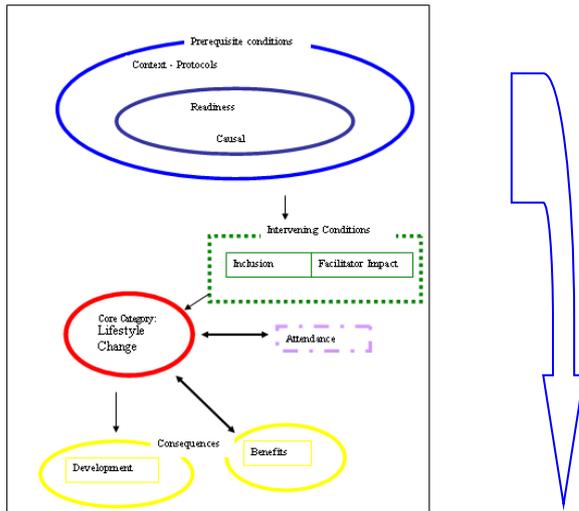
Types of themes/categories	Explanation	Theme in this research	Properties
Core Category	Represents what is central to the research	Lifestyle Change	Confidence Social acceptance
Conditions - 3 types;	Events/happenings which influence the phenomena	Readiness	Self efficacy
1. Causal			Knowledge
2. Contextual	Set of conditions that intersect at a time and place which create a set of problems which people respond to through actions/interactions	Protocol	Environment Flexibility Communication
3. Intervening	Conditions that alter the impact of the causal conditions on the phenomena	Facilitator Impact	Personalised
		Inclusion	Familiarity
Action/interactions	Purposeful acts that are undertaken to solve a problem and in doing so shape the phenomena	Attendance	
Consequences	Range of outcomes	Development	Recognition
		Benefits	Confidence

Core Category - Lifestyle change

Lifestyle change is the core category from the facilitator's perspective and refers to what the facilitators see as central to patient's success (see figure 6.2). Lifestyle change is a multidimensional category which incorporates a number of properties. Facilitators acknowledge that it may constitute different things for different patients and have diverse meaning for the individual. One property of lifestyle change is a form of social acceptance, where the patient feels part of a group. *Dave: 'For one person it would be the fact that they have now gained a whole bunch of friends, for them as an individual it's a fantastic success, they may not have lost any weight, but socially it's just proven awesome' (44)*. For other patients it maybe the change in opinion that forms the lifestyle change. *Emma: 'attitude definitely attitude, adherence, applying themselves when they are actually in the gym' (52)*. Allowing the patient to feel empowered through independence characterises an attribute that enables lifestyle change to happen. *Zoë: To make people independent they have got to, because we can't always be there for them (45)*. The core category for the facilitators' perception of success is characterised by lifestyle change. This can be a change in routine such as an increase in physical activity achievement or a change in their social routine. A lifestyle change can also be portrayed through a change in attitude or opinion. Overall it conceptualises the impact on the patient's life. *Dave: 'Changing people's lifestyle in one form or another' (44)*

Prerequisite conditions

The prerequisite conditions are a combination of the causal and contextual themes. These provide the situational context for the experience of the core category lifestyle change.



Prerequisite Conditions

Causal Condition: The readiness theme can directly affect the extent of lifestyle change achieved by the individual
Properties: self-efficacy and knowledge

Contextual Condition: The protocol theme refers to the set of structures that provide the scheme.
Properties: Environment, flexibility, communication

6.1.1: Explanation of Prerequisite Conditions for Patients

The **readiness** theme is a causal condition for Lifestyle Change. This could affect the success achieved by the individual directly. Problems within this theme may lead to a response such as a decrease in attendance. The condition readiness is talked about by the facilitators regarding change and the patient's state of mind. The facilitators acknowledge the need for the patients to be ready to change in their own mind. This readiness is individual to each patient; *Yvonne: 'A lot of the time I would say most of the time it's their mental state, if they are absolutely ready and willing to get it done' (81).*

The facilitators acknowledge that this has a causal influence on the patients and, although the facilitators can influence the patient and provide support throughout the process, this readiness to change is critical; *Yvonne: 'A lot of the time it's not what we give them but whether or not they are willing' (89).* The concept of readiness to change is incorporated into the transtheoretical model (see Section 2.2.3). This model conceptualises behaviour change as a process that unfolds over time and involves

progression through a series of stages (Prochaska & Norcross, 2001). Patients enter into the scheme at different stages of this model, providing different challenges for the facilitators. The facilitators acknowledge the importance of this state of mind as a causal influence.

This readiness condition contains properties such as self-efficacy and motivation. The property level of motivation is encapsulated by the readiness condition, as each patient will have something that has motivated him or her; these motivational influences influence the readiness. If this motivation is robust this will bolster their readiness and lead on to the patient making the most of the scheme; Emma: *'Attitude definitely attitude, applying themselves when they are working in the gym, application of the programme, not just going through the motions'* (18).

Self-efficacy is also a property of the causal theme and can influence the potential lifestyle change for the patient. The self-efficacy construct represents specific confidence; the patient has to cope with situations without relapsing to the unhealthy habit (Bandura, 1977), in this case being sedentary. McAuley (1993) found that self-efficacy significantly predicted exercise behaviour. Other research supported this finding by showing that self-efficacy is a strong correlate of physical activity (Sallis, Hovell, Hofstetter, & Barrington, 1992). These findings reinforce the current finding of self-efficacy as a property of a causal condition. The facilitators identify the importance of this self-efficacy of the patient. Yvonne: *'Once they believe they can succeed then they usually do, they will but we have to help them believe that they can'* (97).

A further property is knowledge which is necessary for lifestyle change. The knowledge property represents the patients' understanding of how to and why it is necessary to exercise. Purely exercising because they have been asked to without this understanding is recognised to not result in complete lifestyle change. Dave: *'If people can understand what they are doing, why they are going, how it can help, who it's for, then they are more inclined to accept it'* (48) Knowledge also means that the patient understands the reasons behind exercising for health benefits providing them with a sense of accountability. Therefore the responsibility to follow through with the activity is heightened. Within the Transtheoretical Model there are various processes

of change which are activities people use to progress through the stages (Velicer et al., 1998). Knowledge relates directly to a process termed as consciousness raising which refers to increased awareness about the causes, consequences and cures for a particular problem (Velicer et al., 1998). In this context increased patient knowledge is therefore enhancing the patients' readiness to change, a fact that is recognised and utilised by the facilitators.

The facilitators acknowledge their impact on these properties. However the causal theme of readiness does predominantly arise from each individual patient. Once this level of the causal condition is achieved the exercise behaviour is likely to be initiated as long as the intervening conditions make available the provision and support needed for the individual.

A further prerequisite theme is **protocol**, this is a macro contextual condition. This is the set of circumstances that provides the schemes structure. There are many properties to this theme from the perspectives of the facilitators. This is due to the facilitators having an extensive knowledge of the workings and procedures involved in providing many aspects of the scheme. Protocols may intersect to create a set of issues for patients to respond to, through actions such as attendance or non-attendance, which may subsequently limit their lifestyle change experience; Dave: *'I mean we have got a lot of people, a huge volume of people coming in, I think the only issue is the waiting list, we don't really want to have a waiting list'* (28). The protocols of the scheme need to deal with the large volume of people coming through but by coping with this through the introduction of a waiting list, may in fact provide a barrier, the patient's initial start on the scheme will be delayed. For example, from the point of referral to participation. If a variety of facilities and options are in place then there are more options and less barriers for the patient, meaning they may be more able to attend. Flexibility is another property mentioned by the facilitators. This refers to the flexibility in the running of the scheme, it is mentioned in terms of the time at which patients can attend or the different options available for exercise; Dave: *'If you have provided opportunities for other forms be it walks or be it classes or whatever I think it just adds to longevity of their regime'* (48). The availability of facilities and exercise options allow specific action plans to be developed, referred to

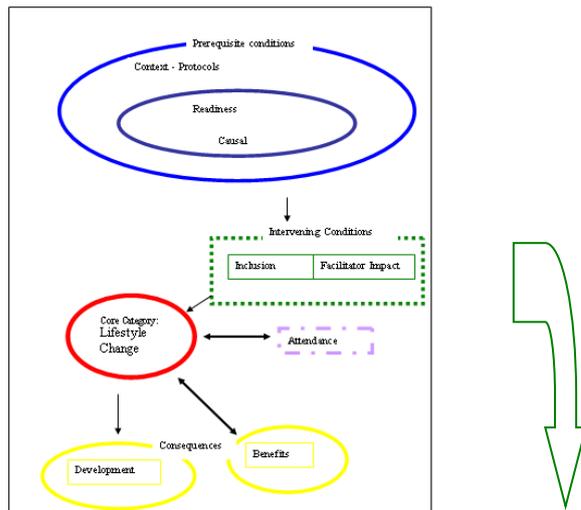
as implementation intention by Gollwitzer (1993). These concern the how, when and where a behaviour will be enacted. Implementation intentions have been found to substantially increase the likelihood of performing health behaviours (Gollwitzer & Oettingen, 2000). This view is reinforced by findings demonstrating that participants are extremely likely to perform the behaviour at the time and in the location that had been previously specified in their implementation intentions (Sheeran & Orbell, 1999).

Communication as a property was also mentioned in similar terms. Failings in communication between parties involved in running the scheme were shown to hinder progress and development. Yvonne: *'You probably get about a hundred percent of the information signed off on about half of the time. So maybe with half our clients there is something that we need to investigate further'*(33). When the details regarding the patient have not been communicated effectively, there is often more follow up required by the staff to ensure all the paper and protocols are in place in order to proceed.

These causal and contextual themes combine to form the prerequisite conditions and therefore the situational context for the patient to experience the core category lifestyle change. Understanding these conditions leading to and surrounding lifestyle change may be the first step in understanding success and the different ways it is experienced by individuals. For the patient to experience lifestyle change they must have sufficient readiness, knowledge, and the protocols need to also be in place (see Figure 6.2).

Intervening conditions

With the sufficient prerequisite conditions in place the patient is more likely to progress to lifestyle change. However, the potency of this experience is shaped by the intervening conditions that impact on the patient.



Intervening conditions

Inclusion the level of this social acceptance is perceived to either hamper or facilitate attendance
 Properties: Familiarity

Facilitator impact mediates the patient's experience; the facilitator's personality and attitude and can act to assist or contain the patient's attendance.
 Properties: Personalised

6.2.2: Explanation of Intervening Conditions for Facilitators

Inclusion was an intervening condition for success. The facilitators perceive that inclusion reinforces the patients commitment and is valuable in bolstering the patients lifestyle change; Yvonne: *'They come for the interaction a little more than they come for the exercise'* (132). This related directly to the process of change called social liberation which is stated to require an increase in social opportunities or alternatives especially for people who are relatively deprived (Velicer et al., 1998)

The facilitators perceive social acceptance to be an important element, which can aid the patient's progression through the scheme. Social acceptance is also perceived by the facilitators to be closely linked to the property environment; Yvonne: *'Well once they are in there, most days it's eighty percent GP scheme in the gym anyway, so once they get in they see what it's like, the lay of the land then they are fine'* (57).

Inclusion incorporates the social aspects of the scheme and may feed into motivation. Previous qualitative research with women supports this stating that the social aspect of group physical activity is a motivating factor for commencing or maintaining a physical activity habit (Eyler, Baker, Cromer, King, & Brown, 1997). Furthermore for older groups it has been shown that the mere social contact that occurs during a structured exercise programme may enhance physical activity participation (Orsega-Smith, Payne, Mowen, Ho, & Godbey, 2007).

Familiarity with the people involved and the environment of the scheme functions to decrease the feelings of apprehension the patients possess. The facilitators acknowledge this and take action to get the patients involved as soon as possible to assist confidence; Yvonne: *'Ok if they are petrified, try and figure out ways of getting them moving a bit more so they get more confident about their ability to do that and then get them into doing a bit more at the gym. So to try and help them through, no matter what's wrong with them they can do something'* (9).

Facilitator impact was also seen as a closely linked intervening condition. The facilitators recognise their influence on the patients particularly by lowering the patient's feelings of apprehension when starting the scheme or a new element of it; Yvonne: *'So its actually getting them in there and having two solid hours hopefully with the same instructor, they just get familiar with us for a start and the gym'* (93). The facilitator impact encapsulates the personalised individual attention provided by the facilitators. The facilitators themselves perceive this in terms of the relationship, the concern and compassion they can offer; Zoë: *'...a lot of them like to feel cared about don't they, like someone is actually taking an interest for them'* (45). This refers to the behavioural process of change called helping relationships whereby a relationship combines caring, trust and acceptance as well as support and can be seen as a therapeutic alliance (Velicer et al., 1998).

In order for the patients to reach their potential lifestyle change the facilitators in this study felt it was important to build a rapport. The facilitators therefore perceive that their personality and attitude towards the patients has an influence on how the patients

feel and therefore their success; Dave: *'If they have got someone they know, they feel, we are approachable for, I think being approachable I would hugely attribute to the success of a scheme'* (56). Within the field of social–cognitive theory, direct attempts to influence and support behaviour are believed to be the most effective way to sustain the new behaviour (Bandura, 1986).

Research has demonstrated the role that the exercise leader has on the participant's attitudes toward exercise as well as their adherence to exercise programmes. The exercise leader has been described as the pivot on which success or failure of a programme depends (Oldridge, 1977). Part of the role of the facilitator is that of an exercise leader. However the role is more complex and extends to providing feedback at assessment sessions within the process of the scheme. The facilitators recognise their influence on the patients. The exercise leader has also been previously identified as the single most important factor affecting exercise adherence (Franklin, 1988). However, in a meta-analysis a small to moderate effect was reported for the influence that exercise leaders have on adherence behaviour (Carron, Hausenblas, & Mack, 1996). There is also evidence that exercise leaders can influence not just attendance but the self-efficacy of a class (Turner et al., 1997). It has been shown that an instructor could influence participants' confidence in their personal capabilities for exercise (McAuley & Jacobson, 1991). Hardcastle and Taylor (2001) found that this kind of professional support appeared to be significant in terms of individualised attention. This is a similar finding to that of the property 'personalised' that emerged from this current research. The current model incorporates the impact of the facilitator as an intervening condition, which can either assist or constrain the actions taken by the patients.

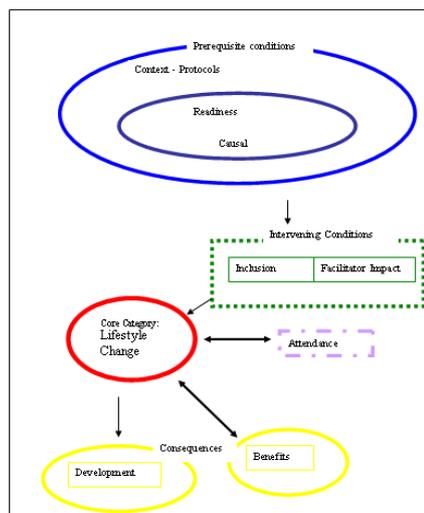
Attendance

This **attendance** theme details the action strategy the patients use to manage the challenges and to facilitate the core category. The dimension of the strategy allows a gradient of responses, for example the patient may only attend the minimum required of the scheme protocol when faced with a problem (such as feeling unmotivated), just attending reassessments and minimum exercise sessions. However, if the patient has

high levels of confidence and motivation they can respond with attendance to all that the scheme has to offer (that is appropriate to them). This may involve attending varied sessions such as group gym sessions, group exercise sessions and independent gym sessions as often as is possible; Zoë: ‘...more they are coming in regularly and consistently’ (7). Emma: ‘...application of the programme not just going through the motions’ (52). According to Gollwitzer (1993), behaviour is most likely when the individual is both motivated to act and has developed strategies which promote behavioural enactment. Therefore, in this context if the patient is feeling motivated and has planned, all things necessary for attendance (i.e. travel arrangements, appropriate clothes, available time in schedule), then they are most likely to actually attend.

Consequences

Two consequence themes emerged from the facilitators findings. **Development** emerged as a macro theme and **benefits** as micro theme.



Consequences

Development was perceived by the facilitators as a macro theme, referring to the development of the scheme

Properties: recognition

The benefit theme refers to the benefits for the individual patients, as perceived by the facilitators

Properties: appearance and confidence

6.2.3: Explanation of Consequences for Referrers

The theme development was highlighted by the facilitators. This theme was mentioned on a more global level rather than regarding an individual patient. Therefore this condition emerged as a macro consequence. Development is in reference to the development of the scheme as a whole rather than for an individual; Emma: *'Just getting a bit more out in the community to help people know we are here. Yes we are very very busy but ultimately the idea is to expand'* (76). Dave: *'For me it's fantastic and again for me I think it's something that really pleases me to see it going in the right direction and peoples attitude to it going in the right direction as long as schemes like this do exist it will continue to go that way'* (84)

The property recognition is discussed by the facilitators in terms of the referrers as well as the public. The referrer's increase in recognition can have a positive effect on the schemes advancement. Dave: *'More and more referrers are actually raising their heads and noticing what exercise can do, what effect it can have on their individuals and how it can effect their outcomes, whereas before I don't think they realised that'* (84).

A further consequence scheme benefits, encapsulates a blend of results that have arisen for the patients as a consequence of participation. The consequence theme benefits contains the property appearance. The facilitators acknowledge that often regardless of referral reason the improvements in appearance are often seen as a positive outcome; Yvonne: *'Most of them want to feel fitter and look better as a general rule regardless of why they are sent to us, yes that's how a lot of people view gym as they see it as them coming to the land of beautiful people'* (57)

The property confidence is a consequence of taking part. The facilitator sees confidence in their patients as a form of success; Yvonne: *'So maybe the first success is getting them aware of that getting them in the gym, getting confident enough to go in the gym'* (63). Zoë: *'having their confidence and independence to come on doing that'* (7). This confidence is also associated with a change in capability. Yvonne: *'One*

lady started at 7km an hour for 3 minutes that was her gym sessions, all she could do, and now she come in six days a week and does 2 classes' (93).

Interestingly, although patients are predominantly referred in order to lower blood pressure and other coronary heart disease risk factors, the properties that emerged from the benefits theme were appearance and confidence. The facilitators acknowledge how patients feel and look to be important outcomes, perhaps more so than some of the more specific measures of health. These properties reinforce the core category of lifestyle change. This combines to depict how success for the patient is perceived by the facilitators.

Conclusion

In conclusion, lifestyle change is the core category and is central to how the facilitators perceive the schemes success. Lifestyle change is therefore related to the other surrounding categories. Figure 6.2 depicts the relationship of the core category to the surrounding conditions. Although this model is meant to be read from the top down, it is important to state that this model is not necessarily linear or fixed. The elements interact over time to influence lifestyle change. The causal conditions for this core category were the readiness and knowledge of the individual patient. The contextual condition for success was the protocols put in place for the scheme to run. These combine to make the prerequisite conditions. The findings from the facilitators also lead to the emergence of two intervening categories, inclusion and facilitator impact. These conditions pertain to success, they act to either assist or constrain attendance, which is the action strategy within this physical activity referral scheme context. The consequences of success resulted in two outcome themes. Benefits contains the perceived positive outcomes which arise from taking part. The combination of benefits and lifestyle change depicts success as perceived by the facilitators. The development theme shows how the facilitators also consider the success of the scheme itself in their conception. This highlights that in the facilitators' construction of success, structure and process are interrelated. The contextual condition of protocols and the development consequence theme emerged as macro conditions and relate to how the scheme is formed on an overall level. These

conditions relate to success of the scheme itself. The other conditions in the model (Figure 6.2) are micro conditions and are on an individual level relating to an individual patient's experience. The macro conditions intersect and interact with the micro ones and generate a unique comprehension of success, as perceived by the facilitators.

The impact of the facilitator may appear incongruous with developing independent exercisers due to the possibility of dependency of the patient on the facilitator. The facilitator provides a constant source of external motivation and encouragement. According to self-determination theory (Deci & Ryan, 1985) this may limit the patients autonomy. The patients may perceive the behaviour as not being self endorsed and therefore limit the patients' self-determination. A balance of trust and understanding needs to be established between facilitator and patient without the reliance or dependency that may hinder independent exercise in the future. The patient findings (6.1) highlighted the possibility of a form of reliance on the facilitators, noted by how they feel when they graduate and the influence of the facilitator becomes considerably less. The facilitators' awareness of the need for the patient to be personally motivated is therefore crucial. The facilitators' perceive readiness as a causal condition for each patient, acknowledging their role to support and guide once the patients demonstrate that they are ready and willing (for implications see section 10.3).

6.3: Referrers – part 3

This section presents the conceptual framework from the analysis of the referrer telephone interviews (see Section 5.4 for details).

Table 6.3.1 provides the descriptive data for the referrers involved in the telephone interviews

Table 6.3.1

Descriptive Data for Referrers

<i>Name</i>	<i>Position</i>	<i>Gender</i>	<i>Ethnicity</i>
Dr Patel	Doctor	Male	Asian
Dr Harrison	Doctor	Female	White British
Nurse Miller	Practice Nurse	Female	White British
Nurse Wilson	Practice Nurse	Female	White British
Nurse Taylor	Practice Nurse	Female	White British
Nurse Syed	Practice Nurse	Female	Asian
Nurse Moore	Lifestyle Clinic Nurse	Female	White British

Figure 6.3 represents the conceptual framework in diagrammatic form. The characteristics of each theme and their links to other themes are explained in Table 6.3.2 and in the text where appropriate.

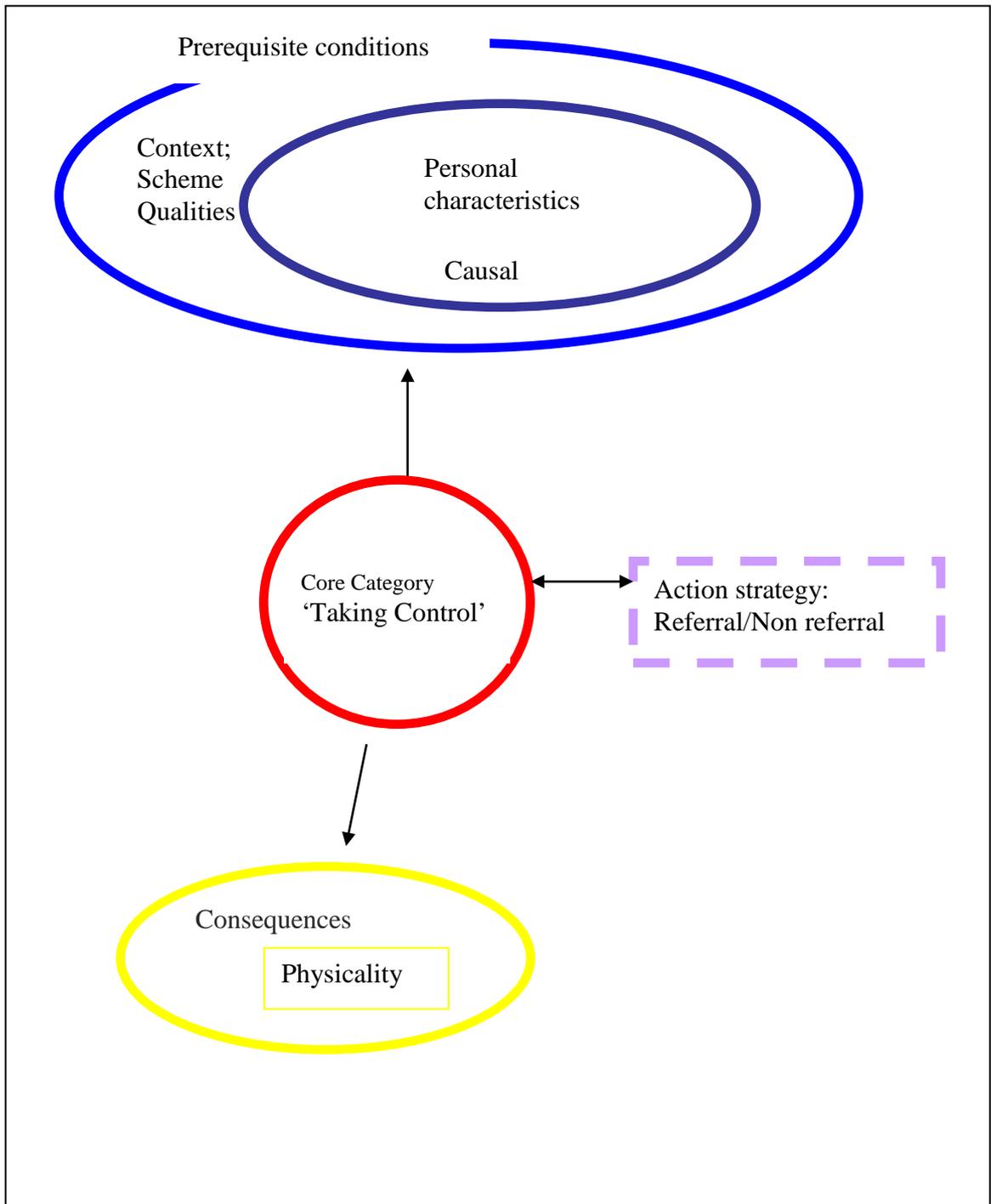


Figure 6.3: Conceptual Framework Explaining Success from the Perspective of the Referrers within an ERS.

Table 6.3.2
Types and Explanations of Themes from Referrers

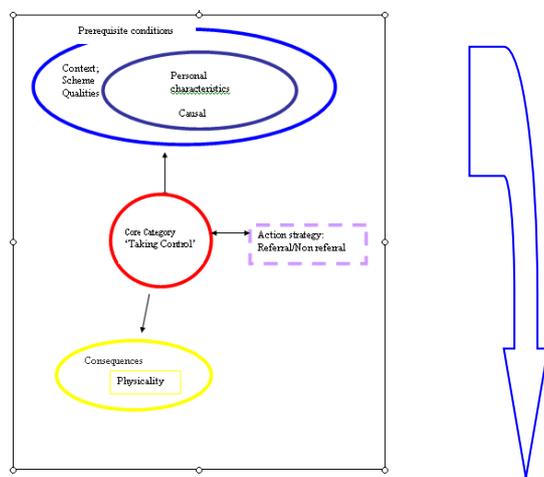
Types of themes/categories	Explanation	Theme in this research	Properties
Core Category	Represents what is central to the research	Taking control	Motivation Knowledge
Conditions - types; 1. Causal	Events/happenings which influence the phenomena	Personal characteristics	Readiness Motivation Confidence
2. Contextual	Set of conditions that intersect at a time and place which create a set of problems which people respond to through actions/interactions	Schemes Qualities	Protocols Financial Feedback
Action/interactions	Purposeful acts that are undertaken to solve a problem and in doing so shape the phenomena	Referral/non referral	
Consequences	Range of outcomes	Physicality	Health Functionality

Core category- taking control

Taking control is the core category for the referrers' perspective of success. It pertains to how the referrers see success for the patients involved. This refers to the patient being able to take control of their lifestyle following participation in the scheme and therefore includes the properties of increased motivation and knowledge. The referrers' view the ability for the patient to self motivate as central to success; Nurse Miller: *Darn right I said, the idea is that you have got to motivate yourself* (23). The knowledge gained from being involved in the scheme is also perceived by the referrers as vital for taking control and therefore success; Nurse Miller: *So to let them know you can't really do one without the other* (diet and exercise) (19).

Prerequisite Conditions

Both a causal and contextual condition emerged as prerequisites for taking control.



Prerequisite conditions

Causal Condition: The personal characteristics of the patient are perceived by the referrers to directly influence the extent to which the patient experiences the core category; taking control.

Properties: Confidence, motivation and readiness

Contextual Condition: Scheme qualities refers to the procedures and practices in place.

Properties: Protocol, financial and feedback

6.3.1: Explanation of Prerequisite Conditions for Referrers

One causal theme is the **personal characteristics** of the patients. The referrers' perceive these characteristics as influencing the success achieved by the patient. This theme contains a number of properties such as confidence, motivation and readiness to change. The referrers' highlight the importance of confidence for the patients in order for them to achieve; Nurse Miller: *'To know yes, they can actually do it because a lot of them believe they can't do it' (19).*

The referrers' also mention the level of motivation of patients and acknowledge their role as referrers in reinforcing this at the point of referral; Nurse Miller: *'If you are getting the guidance you need to do it and if you are not going to do it I'm not sending you on it. And that gives them the incentives I think to actually be there' (11).*

Motivation levels are linked to both apprehension and their readiness to change; Dr. Harrison: *'though they may have been reluctant in the beginning they actually then build on it and get other people to do the same. The difficulty is actually getting them there in the first place' (23).* The referrers perceive getting the patients to initiate the scheme as the major obstacle. However, behaviour change theory suggests that the achieving maintenance through the one or more periods of relapse to earlier stages as especially challenging and requires an enabling and supportive environment (Prochaska et al., 1992).

The readiness to change property refers to the patient's state of mind regarding exercise and how the referrers perceive this to influence the patient's actions; Dr. Harrison: *'It's usually a change round of the patients' attitude, because that's what makes a difference and once they realise, taking charge of doing things can make a difference to how they feel' (23).* The referrers therefore acknowledge the personal characteristics of the patients as a critical causal influence on taking control.

The referrers recognise that it is crucial for the patient to be ready to change and that their confidence and motivation levels need to be elevated in order for them to become active and utilise the scheme. Previous research has described the process involved in eliciting and maintaining change (Prochaska & DiClemente, 1982) (see Section 2.2.3). The patient's readiness and confidence may be linked to their

knowledge. For example recent research has shown that those in the lower stages of change are likely to have less knowledge about health benefits and recommendations (Kloek, Van Lenthe, van Nierop, Schrijvers, & Mackenbach, 2006). The referrer's ability to recognise a patient's readiness, can therefore be considered an asset to the process allowing the most appropriate patients to be referred at a suitable time.

A contextual theme is **scheme qualities**. The referrers highlight a number of properties that make up this theme. Scheme qualities refer to the procedures and practices that are in place for the scheme to proceed. These can create a set of issues or difficulties that have to be overcome in order for success to be achieved. One property of this theme is protocol, which in this situation presents a problem; Dr. Harrison: *'So but what you want them to do is lose weight and get their blood pressure down, it's rather difficult to do when you are in this catch twenty two, where they are not eligible because of the high blood pressure, but that's exactly why we want them to go'* (19). The stringent exclusion criteria that is in place, which is based on the guidelines provided by the British Association for Cardiac Rehabilitation (2006) is used to safe guard the patients. However in the opinion of the referrers this may also prevent some patients who could in fact benefit, from being included on the scheme.

Another property within the scheme qualities theme for the referrers is financial. The referrers perceive the reduced cost to be beneficial in allowing the patients access to facilities they would otherwise be unable to utilise; Nurse Moore: *'...we are quite a deprived area and to know that they are getting the full works of the gym for only eleven pound something is um or pay and play is um, is very good for them as it gives them the open access that they haven't had before'* (17). This reduced cost helps to diminish the financial barrier that would otherwise be substantial for the majority of patients. The referrers recognise the financial barriers faced by the majority of their patients (see Section 3.1). The socio-economic status of the patients in the target area means that they are more likely to cite lack of money as a barrier to exercise (Chinn, White, Harland, Drinkwater, & Raybould, 1999).

Another property of the scheme qualities perceived by the referrers is feedback. This refers to the information they receive regarding the progress of the patients and the

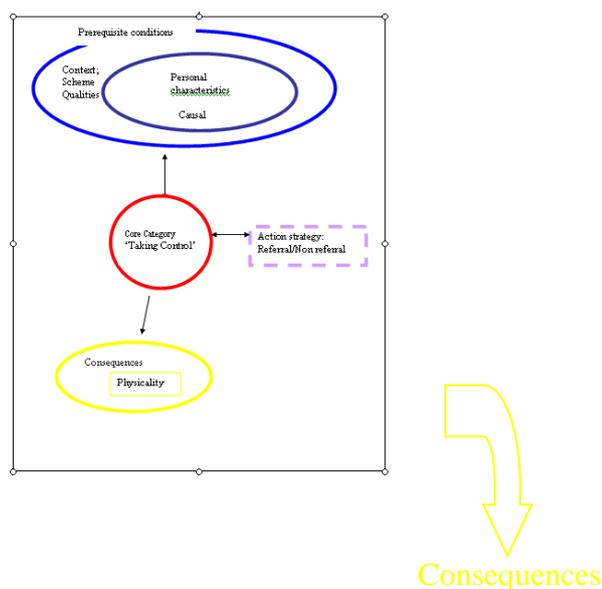
scheme. This information may influence the input and effort they are prepared to invest; Dr. Patel: *'So it would be useful to actually have that to see how many of our patients are actually attending as sometimes you might actually refer, but you never know if they actually went there or not'* (41). The feedback can be formal from the scheme organisers or informally from the patients themselves; Nurse Moore: *'All the patients I refer I see either weekly, fortnightly or once a month and have done for around 18 months since they have been going, so I always get feedback from them'* (13). The NQAF recognises this need for collaboration between parties in the referral system, to allow ideas to be discussed and information shared for effective running of a scheme (Department of Health, 2001a). A lack of feedback is a concern that has been found in previous research on the health professionals perspective of exercise referral (Graham, Dugill, & Cable, 2005).

Action strategy; Referral/ non-referral

This **referral** theme details the action strategy the referrers use to manage the challenges that arise. The referrers, when faced with ambiguous or particularly stringent inclusion/exclusion criteria may lead to either refer inappropriately or not refer the patient in question. If the referrer is faced with complex forms or protocol to follow this may lead to non-referral or inappropriate referral. The referrers must invest time and effort into the protocols to overcome the problems as they occur. Furthermore if the referrers' are not receiving feedback regarding the progress of those they refer they may well begin to invest less time and effort, as they are unsure of the outcomes and benefits. Dr. Harrison: *'Increasing feedback would be a help, because it's irritating to find we have referred people inappropriately'* (35).

The referrers' action strategy is that of referral or non-referral; this allows them to cope with issues that may arise as a result of the causal or contextual conditions. The referrer can decide if the patient is prepared and if the scheme is adequate to be effective for them. Properties within the scheme qualities theme such as the protocols relating to the exclusion criteria will be dealt with by this strategy.

Consequences of taking control



Physicality emerged as the outcome theme and therefore the referrers perceive occurs as a consequence of taking control.
Properties: Health and functionality

6.3.2: Explanation of Consequences for Referrers

This consequence theme refers to the aspects of **physicality** that occur as a consequence of taking control and being successful. The referrers discuss two properties of this theme; those being health and functionality. The property of health is considered to contain elements of fitness and well being; Dr. Patel: *'I'm hoping when I refer, for people to lose their weight and get their blood pressure down'* (27). The doctor in this case is concerned with measurable biological outcomes, demonstrating the enduring nature of the medical model principles in health care professionals (Marks et al., 2000) (see Section 2.2.1).

In one case functionality was mentioned as a negative outcome as the patient had experienced negative consequences of exercise and had therefore been left with

limited mobility; Nurse Taylor: '*She has severe arthritis and ended up unable to walk for three days*' (13). This nurse felt that their patient's limitations had not been fully appreciated; Nurse Taylor: '*someone had said that she should do walking exercises resulting in an unexpected damaging outcome*' (20).

Functionality and psychological issues are closely linked as improvements in the former can lead to people feeling good; Dr. Harrison: '*... and certainly for some patients just getting mobile and active makes them feel better*' (27). This element may feedback into another theme; such as readiness through the properties of motivation and confidence therefore leading to continued attendance and subsequent success.

Conclusion

The properties within the core category, from the referrers' perspective, relate to psychological concepts, such as motivation. This is interesting given that the referrers send patients to the scheme for primarily physical reasons such as reducing blood pressure and weight. However, they recognise the crucial importance of the patient being prepared to take control. They are therefore acknowledging the importance of how the patient feels and how this can impact on their subsequent success.

Traditionally the referrers are seen to be working within the biomedical model and it has been noted that this is still evident in the current health service (Marks et al., 2000). The dominance of reporting physiological changes has had the consequence that the medical model has continued to be applied to the evaluation of exercise referral schemes, and holistic health benefits such as mental health and social interaction have traditionally been neglected (Crone et al., 2005). Preceding research has begun to highlight the importance of exercise referral schemes for more than purely physical health (Graham et al., 2005; Hardcastle & Taylor, 2001). Arguably these self-reported outcomes are as important as those which can be measured objectively by physiological assessment as they have been perceived and experienced by the participants themselves and will have some influence on their own perception of health and of its improvement. These perceptions are valuable in their own right and may have often been overlooked when traditional methods to establish effectiveness of health care services, such as randomised controlled trials are used (Bryant et al., 2005).

These referrer findings indicate there has been an increased awareness and acceptance of the concepts of holistic models of health by health professionals. The impact of this appreciation of the worth of psychological and social outcomes may result in patients being referred onto schemes for social interaction or well being, rather than for weight loss or hypertension. The National Health Service aims and claims to adopt a holistic approach to health and public health improvement strategies (Department of Health, 2004b). The findings from the referrers' perspective indicate that health professionals are beginning to recognise and embrace the psychological and social aspects of health.

The majority of the referrers interviewed were female which may have influenced the development of the core category. It has been found previously that female doctors are more sensitive to the doctor patient relationship, more accepting of the patients feelings and more open to psychosocial factors in patient care, educating patients about their problems and counselling patients about health matters (Maheux, Dufort, Beland, Jacques, & Levesque, 1990). The current findings also stem from mainly nurses, which may have influenced the types of themes emerging. It has been argued that doctors consider their primary responsibility to be the diagnosis and treatment of disease processes, while nursing traditions place the patient's life situation and experience as the primary focus of practice (Campbell, Mauksch, Neikirk, & Hosokawa, 1990). In a review it was noted that there is some evidence that, in comparison to doctors, nurses give patients more information and communicate more overall, use more open-ended questions and positive talk and give higher quality care (Hall, Roter, & Katz, 1988). The nurses may be more sensitive to the psychological and social needs of the patient and how these can be addressed from attending the scheme, therefore leading to the development of this specific model. Research by McKenna and colleagues (1998, 2004) also confirmed how nurses may benefit from longer consultation times; however this research further highlighted the overwhelming importance of the personal health of the referrer in increasing the likelihood of promoting physical activity (McKenna, Naylor, & McDowell, 1998; McKenna & Vernon, 2004). It is therefore worth considering that this may be a factor in how the referrers perceive a scheme and its success (see Section 11.1 for limitation discussion). Consequently the importance a referrer gives to physical activity personally, may influence how they view success.

In conclusion there are a number of themes that surround the core category of taking control. The referrers' model is unique in the manner in which it incorporates elements required from the individual for success but also addresses the macro level of regarding success of the scheme as a whole. The causal category is that of the personal characteristics of the patients, which is perceived by the referrers as the theme that leads to the development of taking control. The contextual condition scheme qualities provides the set of properties that are seen to pertain to the core category. An action strategy of either referral or non-referral is evident from the referrer's responses. The referrers perceive the consequences of referral to incorporate both physical and psychological outcomes.

6.4: Qualitative Findings Summary

The qualitative findings resulted in three models (figures 6.1, 6.2 & 6.3) which contextualised success from the perspectives of each group of participants. Figure 6.4 incorporates these three models and presents a visual representation of the concept of success, which embodies these three perspectives, for the Healthwise scheme.

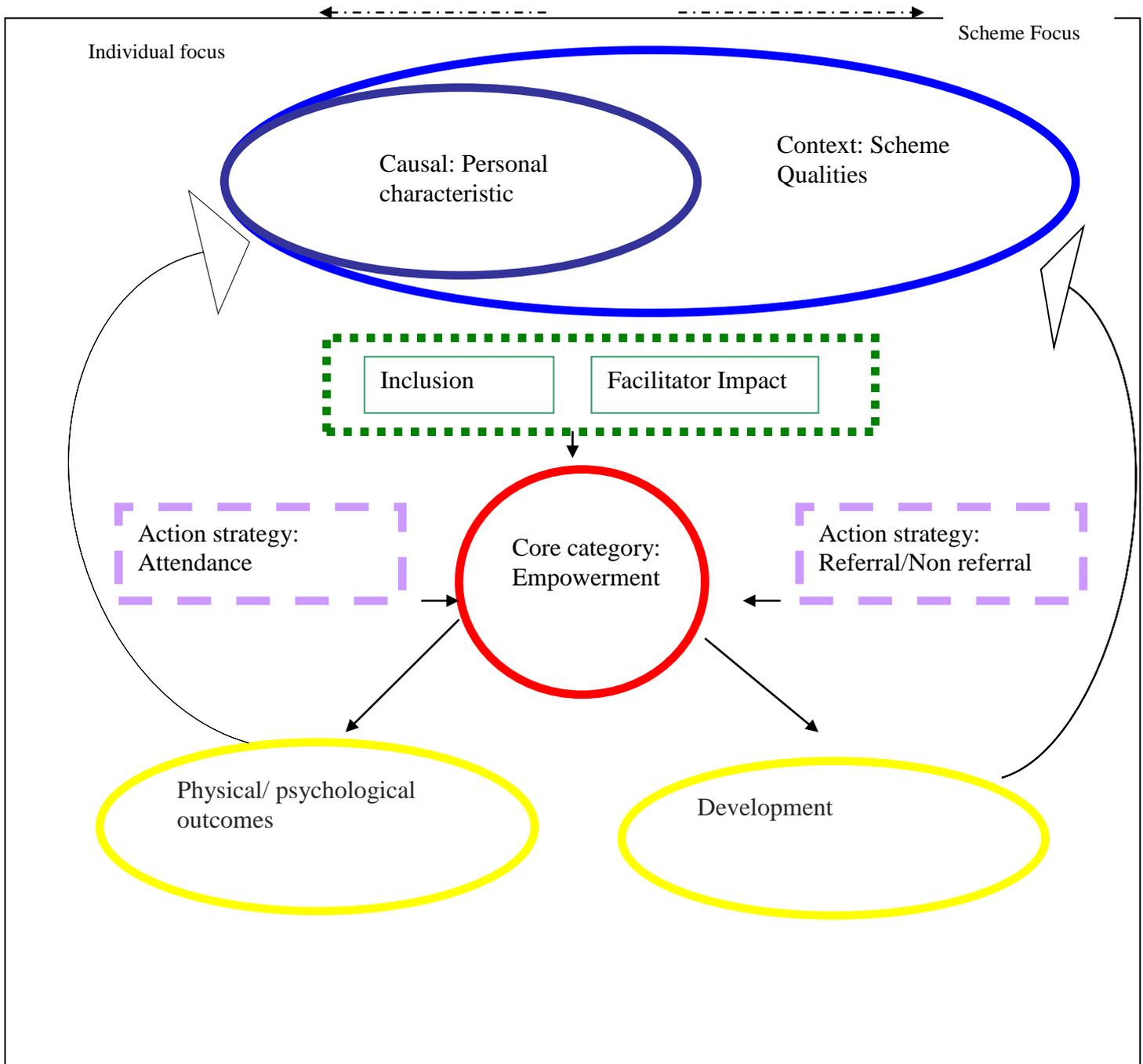


Figure 6.4: Conceptual Framework Explaining the Perception of Success within the Healthwise ERS.

Table 6.4 Types of Themes for Combined Model

Types of themes/categories	Explanation	Theme in this research	Properties
Core Category	Represents what is central to the research	Empowerment	Engagement
Conditions - 3 types;	Events/happenings which influence the phenomena	Personal Characteristics	Confidence Motivation Knowledge
1. Causal			
2. Contextual	Set of conditions that intersect at a time and place which create a set of problems which people respond to through actions/interactions	Scheme Qualities	Environment Flexibility Communication
3. Intervening	Conditions that alter the impact of the causal conditions on the phenomena	Facilitator Impact	Personalised
		Inclusion	Social Acceptance
Action/interactions	Purposeful acts that are undertaken to solve a problem and in doing so shape the phenomena	Attendance	
		Referral	
Consequences	Range of outcomes	Development	Scheme Recognition
		Physical/Psychological Outcomes	Health Functionality Knowledge Confidence

Examination of the models led to the recognition of commonalities between themes, across the three pictorial representations of success. For example, properties relating to physical outcomes were evident, which may be expected, due to the referral reasons predominantly being physical in nature (see Table 7.1). Properties such as confidence and knowledge also feature strongly within the conceptions of success this demonstrates the value placed on such properties, for the parties involved. For example, confidence features as a property of the consequence theme from both the patients and facilitators perspective, and a prerequisite property from the referrers.

The core category empowerment integrates concepts relating to taking part, not only referring to attending the scheme, but to the patients engagement with what the scheme has to offer. Empowerment involves connecting with the scheme, with both its protocols and people. Engagement incorporates the satisfaction detailed by the patients through involvement with the scheme. The core category empowerment refers to both the desire and ability to take part.

The facilitators perception contains the theme development (Figure 6.2), this is a macro theme i.e., one that refers to the scheme, rather than an individual's success. Figure 6.4 incorporates this macro theme within the overall model. The right hand side of the model (Figure 6.4) portrays the success of scheme from this macro perspective incorporating the pre-requisite theme scheme qualities and the intervening theme of facilitator impact. The action strategy of referral along with the subsequent empowerment and the consequence of scheme development, all refer to the scheme as a whole. A feedback loop can then be seen from the consequence scheme development to the contextual theme of scheme qualities. The feedback loop depicts how the consequences and outcomes of the scheme feed into the prerequisite conditions, demonstrating how success can change and adapt overtime.

The left hand side of the overall model (Figure 6.4) encapsulates the themes relating to the individual patient (see Table 6.4). This side of the model has a personal, internal foundation. The causal theme of personal characteristics refers to the level of confidence, motivation and knowledge of the individual patient. The intervening condition of inclusion refers to the level of social acceptance achieved by the patient.

The action strategy refers to the patient's individual attendance and impacts on the level of engagement achieved. The physical and psychological outcomes attained by the individual occur from this. A feedback loop exists whereby aspects from these outcomes feedback to the personal characteristics of the patients influencing the associated properties such as motivation, confidence and knowledge. Success as a concept is not static, the individuals experiences and knowledge, can change how it is perceived through the course of engagement with the scheme.

Due to the fluid nature of the model resulting from the flexibility and adaptability inherent in them, there is an interaction amongst the themes. The perception of success itself therefore has the potential to adapt over time and experience.

The feedback loops within the overall model depict this flexibility and interaction for example, how the outcomes can feedback into the pre-requisite conditions Furthermore both sides of the model, do not act independently, but serve to influence each other.

In answer to the research question (RQ1) (see Section 1.3) three models have been presented in chapter 6 to clarify how success is perceived by each of the major parties involved in the provision and execution of the Healthwise ERS. Through a detailed exploration; the full range and intricacy of the findings have been displayed in a dense account of the three perceptions of success (see chapter 6). These have been examined and combined to present a comprehensive concept of success . A inclusive model has been presented to highlight the similarities and differences between the models, providing a merged framework to display how success is perceived within the Healthwise ERS (figure 6.4).

Chapter 7: Quantitative results – part 4

RQ2: Of the routinely collected scheme evaluation data, which of the independent variables are associated with the dependent variables?

This chapter details the quantitative results in answer to the research question (RQ2). The characteristics of the cohort referred onto the Healthwise scheme are described. The results of the logistic regression are detailed in this section. The regression involved incorporating the previous outcome as an independent variable for the next stage (figure 5.5). Within this multi-stage regression, each stage is referred to as a separate model, however the combined results can be seen in Figure 7.1. The dataset consisted of 1315 complete data records for inclusion in the analysis.

7.1: Descriptive Statistics

This section provides a breakdown of the dataset for the variables captured. The following tables provide the frequencies for each category involved in analyses. The fewer cases per variable, the greater the opportunity for the estimates of the regression coefficients to be unreliable, along with the confidence levels being less accurate (Peduzzi et al., 1996). These frequencies are therefore provided to aid interpretation and comprehension of the logistic regression analysis.

Table 7.1

Independent Variable Frequencies

<i>Independent variable category</i>	<i>Number</i>	<i>Percentage</i>
Gender		
Female	860	65.4
Male	455	34.6
Age		
Over 50	539	41.0
Under 50	776	59.0
Ethnicity		

White Background	913	69.4
Asian Background	147	11.2
Black Background	231	17.6
Chinese Background	10	0.8
Mixed Background	14	1.1
Occupation		
Unemployed	470	35.7
Retired	286	21.7
Unskilled	75	5.7
Partly skilled	97	7.4
Skilled manual	63	4.7
Skilled non manual	194	14.8
Managerial	70	5.3
Referral reason		
Cardiovascular heart disease	230	17.5
Pulmonary Diseases	130	9.9
Metabolic Diseases	478	36.3
Orthopaedic Diseases	325	24.7
Neuromuscular Disorders	14	1.1
Mental Health	123	9.4
Miscellaneous	15	1.1

Attendance is used as a dependent variable in model 1 and an independent variable in subsequent logistic regression (models 2 and 3). Weight loss also doubles as an independent variable for model 3 (see Figure 5.5).

Table 7.2

Dependent Variable Frequencies

<i>Dependent variable category</i>	<i>Number</i>	<i>Percentage</i>
Attendance		
Success	750	57
Failed	565	43
Weight		
Weight gain (or same)	877	66.7
Weight loss	438	33.3
MAP		
MAP gain (or same)	668	50.8
MAP reduction	647	49.2

Data displaying the extent of change achieved in weight and blood pressure can be found in Appendix I along with additional information regarding the portion of the sample above the high blood pressure threshold (140/90 mmhg).

In order to determine that there are sufficient cases for the number of variables included in the logistic regression a checking method was carried out. The number of the least common of the possible outcomes, divided by the number of variables should be at least 10 (Peduzzi et al., 1996). In this case the outcome with the least number was provided by model 2, the weight loss category ($438/26= 16.8$); this calculation provided a result that met the suggested criteria.⁵

⁵ Note; includes dummy variabes

7.2: Logistic Regression: Model 1

Model 1 explored the association between the independent variables and the dependent variable of attendance.

Table 7.3

Goodness of Fit (model 1)

<i>Goodness of fit test</i>	χ^2	<i>df</i>	<i>p</i>
Hosmer & Lemeshow	7.916	8	0.442

Note. Cox and Snell $R^2 = 0.046$, Nagelkerke $R^2 = 0.061$

The inferential goodness of fit test yielded an insignificant result ($p=0.442$), suggesting that the model was fit to the data well. Two additional descriptive measures of goodness of fit R^2 indices are presented; neither correspond to predictive efficiency of variance explained and are therefore provided to supplement the goodness of fit statistic (Menard, 2000).

Table 7.4

The Observed and Predicted Frequencies for Attendance (model 1)

<i>Observed</i>	<i>Predicted</i>		<i>% correct</i>
	Failed	Success	
Failed	200	365	35.4
Success	165	584	78.0
Overall % correct			59.7

Table 7.4 demonstrates the degree to which the predicted probabilities agree with actual outcomes. The overall correction prediction was 59.7%, an improvement over the chance level.

Table 7.5

Association with Outcome of Attendance (model/stage 1)

<i>Variables</i>	<i>Exp (β)</i>	<i>95% CI</i>	<i>p-value</i>
Age	1.019	1.008-1.030	0.001**
Gender (ref –male)	0.923	0.721-1.182	0.526
Ethnicity			0.038*
White (ref)	1.000		
Asian	1.383	0.946-2.2021	0.094
Black	0.866	0.640-1.172	0.352
Chinese	0.795	0.224-2.825	0.723
Mixed	6.310	1.388-28.695	0.017*
Occupation			0.408
Unemployed (ref)	1.000		
Retired	1.300	0.889-1.901	0.176
Unskilled	0.874	0.529-1.444	0.600
Partly skilled	1.238	0.786-1.952	0.375
Skilled manual	1.018	0.591-1.752	0.950
Skilled non manual	1.324	0.935-1.875	0.114
Managerial	1.610	0.950-2.729	0.077
Professional	1.328	0.762-2.317	0.317
Condition			0.065
Cardiovascular (ref)	1.000		
Pulmonary	0.546	0.346-0.860	0.009**
Metabolic	0.755	0.537-1.061	0.106
Orthopaedic	0.724	0.505-1.040	0.081
Neuromuscular	2.670	0.709-10.055	0.147
Mental	0.919	0.571-1.479	0.728
Miscellaneous	0.635	0.217-1.854	0.406

p<0.05*, p <0.01**, p<0.001***

As can be seen from Table 7.5 (model 1 results) four independent variables are significantly associated with attendance outcomes

Increasing age is associated with the likelihood of patients successfully attending ($\text{Exp}(\beta)=1.019$; 1.008- 1.030; $p< 0.001$). With every increase in year of age there is a 1.9 % increase in the likelihood of attending.

Table 7.5 shows that overall ethnicity is associated with the likelihood of attendance ($p<0.05$). In comparison to the white category (reference category), patients in the mixed category are more likely to attend ($p<0.05$). This result needs to be interpreted with caution since this category contains a small number of patients ($n=14$). This small number probably accounts for the large range shown by the confidence interval ($\text{Exp}(\beta)=6.310$; 1.388-28.695).

The pulmonary condition is associated with the likelihood of unsuccessful attendance ($\text{Exp}(\beta) =0.546$; 0.346-0.860; $p<0.01$). When compared to those referred for cardiovascular conditions, those patients referred with pulmonary condition are 45.4% less likely to attend successfully.

7.3: Logistic Regression: Model 2

Model 2 explored the influence of the independent variables on the outcome variable of weight loss.

Table 7.6

Goodness of Fit (model 2)

<i>Goodness of fit test</i>	χ^2	<i>df</i>	<i>p</i>
Hosmer & Lemeshow	4.866	8	0.772

Note. Cox and Snell $R^2 = 0.086$, Nagelkerke $R^2 = 0.119$

The inferential goodness of fit test yielded an insignificant result ($p=0.772$), suggesting that the model was fit to the data well.

Table 7.7

The Observed and Predicted Frequencies for Weight Loss (model 2)

<i>Observed</i>	<i>Predicted</i>		<i>% correct</i>
	Weight gain	Weight loss	
Weight gain	823	53	93.9
Weight loss	375	63	14.4
Overall % correct			67.4

Table 7.7 demonstrates the degree to which the predicted probabilities agree with actual outcomes. The overall correction prediction was 67.4, a noticeable improvement over the chance level.

As can be seen from Table 7.8 (model 2 results) two independent variables are associated with weight loss outcomes.

In comparison to the white category (reference category), patients in the mixed ethnic category are significantly more likely to achieve weight loss. The descriptive data (Table 7.1) shows this category contains a small number of patients which may have influenced the result. This small number probably accounts for the large range shown by the confidence levels ($\text{Exp}(\beta)=3.991$; 1.191-13.373; $p<0.05$).

Those who successfully attend are 3.5 times more likely to achieve weight loss ($\text{Exp}(\beta)=3.541$; 2.721-4.608; $p<0.001$),.

Table 7.8

Associations with Outcome Weight Loss (model/stage 2)

<i>Variables</i>	<i>Exp (β)</i>	<i>95% CI</i>	<i>p-value</i>
Age	0.998	0.986-1.009	0.670
Gender (ref-male)	1.075	0.825-1.401	0.593
Ethnicity			0.111
White (ref)	1.000		
Asian	1.330	0.904-1.955	0.148
Black	1.185	0.855-1.641	0.307
Chinese	1.555	0.395-6.121	0.528
Mixed	3.991	1.191-13.373	0.025*
Occupation			0.451
Unemployed (ref)	1.000		
Retired	0.811	0.541-1.216	0.311
Unskilled	0.900	0.514-1.575	0.712
Partly skilled	0.648	0.387-1.085	0.099
Skilled manual	1.373	0.770-2.449	0.282
Skilled non manual	0.930	0.641-1.350	0.704
Managerial	0.661	0.371-1.178	0.160
Professional	0.963	0.535-1.732	0.899
Attendance	3.541	2.721-4.608	<0.001***
Condition			0.587
Cardiovascular (ref)	1.000		
Pulmonary	0.951	0.580-1.558	0.842
Metabolic	1.146	0.803-1.637	0.453
Orthopaedic	0.892	0.609-1.307	0.558
Neuromuscular	0.622	0.183-2.110	0.446
Mental	0.835	0.499-1.397	0.492
Miscellaneous	1.550	0.504-4.772	0.445

7.4: Logistic Regression: Model 3

Model 3 explored the influence of the independent variables on the outcome variable of mean arterial pressure (MAP) reduction.

Table 7.9

Goodness of Fit (model 3)

<i>Goodness of fit test</i>	χ^2	<i>df</i>	<i>p</i>
Hosmer & Lemeshow	12.887	8	0.116

Note. Cox and Snell $R^2 = 0.032$, Nagelkerke $R^2 = 0.042$

The inferential goodness of fit test yielded an insignificant result ($p=0.116$), suggesting that the model was fit to the data well.

Table 7.10

The Observed and Predicted Frequencies for MAP (model 3)

<i>Observed</i>	<i>Predicted</i>		<i>% correct</i>
	MAP gain	MAP reduction	
MAP gain	392	275	58.8
MAP reduction	297	350	54.1
Overall % correct			56.5

Table 7.10 demonstrates the degree to which the predicted probabilities agree with actual outcomes. The overall correction prediction was 56.5, an improvement over the chance level.

Table 7.11

Associations with Outcome of MAP (model/stage 3)

<i>Variables</i>	<i>Exp (β)</i>	<i>95% CI</i>	<i>p-value</i>
Age	0.999	0.989-1.009	0.698
Gender (ref- male)	0.923	0.724-1.176	0.515
Ethnicity			0.539
White (ref)	1.000		
Asian	1.080	0.750-1.558	0.677
Black	0.987	0.724-1.321	0.884
Chinese	2.458	0.602-9.792	0.212
Mixed	2.214	0.624-6.709	0.237
Occupation			0.166
Unemployed (ref)	1.000		
Retired	0.832	0.576-1.211	0.343
Unskilled	0.734	0.441-1.217	0.230
Partly skilled	0.892	0.577-1.422	0.667
Skilled manual	1.875	1.044-3.227	0.035*
Skilled non manual	1.228	0.868-1.732	0.248
Managerial	0.884	0.536-1.501	0.679
Professional	1.046	0.603-1.800	0.884
Attendance	1.680	1.250-2.003	<.001***
Condition			0.698
Cardiovascular (ref)	1.000		
Pulmonary	0.863	0.552-1.353	0.523
Metabolic	1.156	0.829-1.604	0.396
Orthopaedic	0.918	0.650-1.310	0.653
Neuromuscular	0.918	0.315-2.807	0.912
Mental	0.879	0.555-1.412	0.609
Miscellaneous	0.945	0.318-2.671	0.880
Weight loss	1.292	1.008-1.641	0.043*

As can be seen from Table 7.11 (model 3 results) three independent variables are significantly associated with MAP outcomes.

When compared to the unemployed category, the skilled manual category had an increased likelihood of achieving a reduction in MAP (Exp (β)=1.875; 1.044-3.227; $p<0.05$).

Successful attendance was shown to be associated with the proportion of patients that were included in the group that had achieved a reduction in MAP (Exp(β)= 1.680; 1.250-2.003; $p<0.001$).

Those who achieved weight loss had an increased likelihood of achieving a reduction in MAP (Exp(β)= 1.292; 1.008-1.641; $p<0.05$).

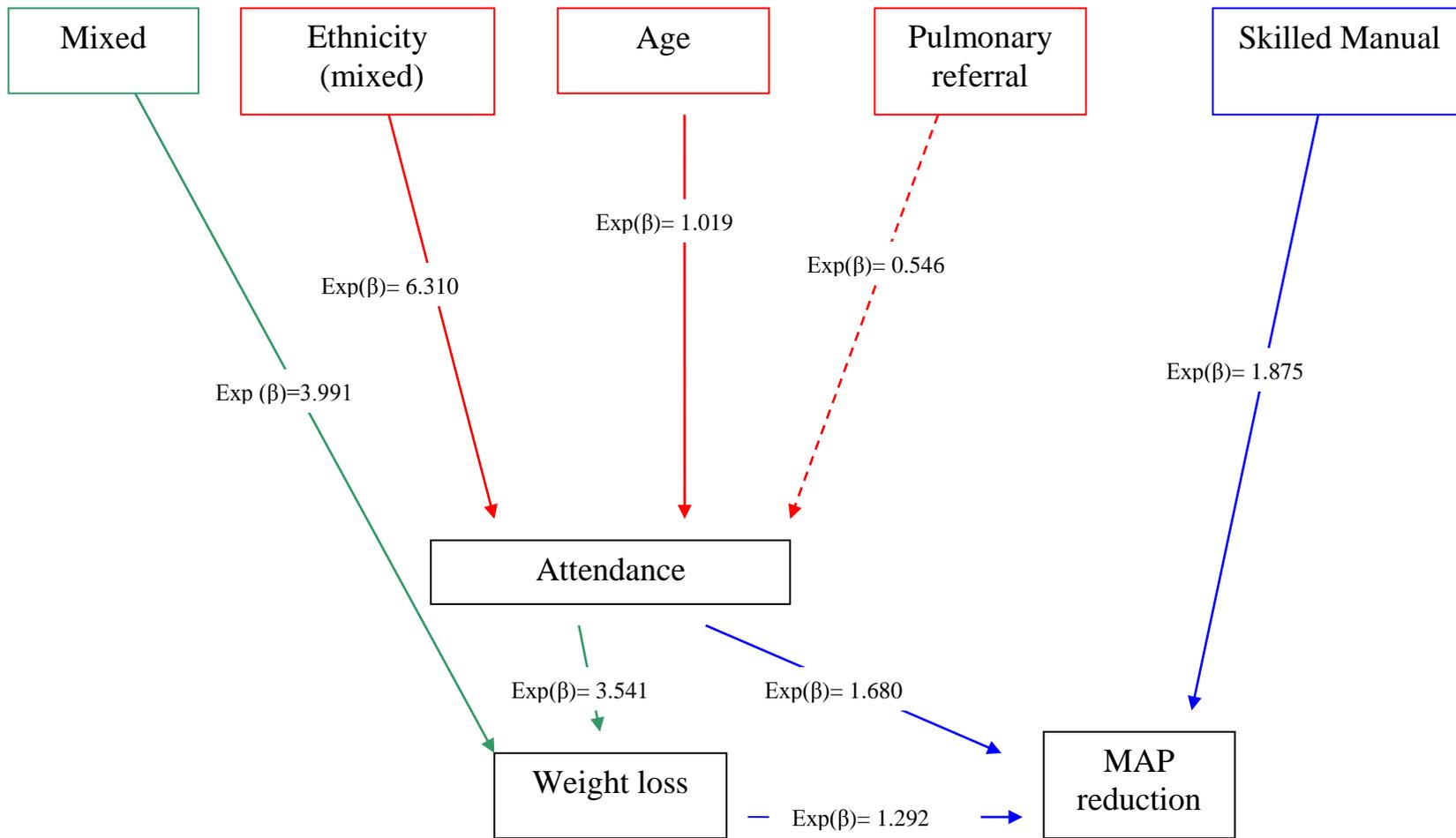


Figure 7.1: Outcomes from the Binary Logistic Regression

Model/Stage 1

Model/Stage 2

Model/Stage 3

7.5: Supporting Analyses

Residuals

Residuals were examined in an attempt to isolate any points where the model may have fit the data poorly. No cases were seen to fall outside the +/- 3 value deemed to be that which may cause concern (Field, 2005).

Discriminant analyses

Discriminant analysis was used to determine whether or not differences in group size, particularly the large discrepancy in Model 2 (group 0: n=877; group 1: n=438), influenced outcomes.

Table 7.12

Discriminant Analysis

	<i>Variables included</i>	<i>Wilks' λ</i>	<i>Wilks' λ (cumulative)</i>	<i>p-value</i>
Model 2	Attendance	0.995	0.925	<0.000
	Ethnicity	0.930		

The results presented were the same regardless of whether group sizes were assumed to be equal or were accounted for in the calculation of outcomes.

Chapter 8: Quantitative Discussion

The second research question was concerned with the routinely collected scheme evaluation data. An examination of the independent variables and the associations with the dependent variables was carried out (see Chapter 7). This chapter discusses these findings in the context of existing evidence to elucidate likely explanations for the results. Logistic regression analysis can generate unexpected results, which can make interpretation difficult, as variables that are known to be related to outcomes may not be as predictive when combined with other variables (Tabachnick & Fidell, 1996). The enter method was used in the analysis. This involves all the covariates being placed into the regression model in one block. Binary outcomes categories were used which helped to simplify the interpretation of the resulting odds ratios. It was therefore possible to provide potential explanations for the results using existing literature.

8.1: Model 1

Age

As illustrated in Table 7.5, there was a positive relationship between age and the likelihood of successful attendance, a finding similar to that of Dugdill and Graham (2005), James et al (2008) and a review of ERS interventions (O. Morgan, 2005). Failure of younger people to complete programmes following referral could be as a result of time constraints that tend to reduce with age, such as work commitments. Most consistently reported as the primary barrier for activity is a perceived lack of time (Sallis & Owen, 1999). Younger and middle aged adults are likely to have a greater number of commitments that might be prioritised at the expense of physical activity, such as work and a young family. Despite this, as adults reach old age, the prevalence of physical activity decreases (A. H. Taylor et al., 2004; Trost, Owen, Bauman, Sallis, & Brown, 2002). At this time ill-health may replace time constraints as the primary reason given for inactivity (Health Education Authority, 1992). However, Resnick and Spellbringer (2000) observed that older adults had a greater awareness of health issues and subsequently were often more motivated when offered preventative health programmes. Furthermore, older age has been shown to be positively associated with physical activity scheme completion (Anton et al., 2001; K.

S. Martin & Sinden, 2001). Older adults consistently report reasons such as fear of falling, and fear of exacerbating medical condition as reasons for inactivity (Lim & Taylor, 2005). Therefore, it may be that once the exercise is offered and provided in a safe environment and their health needs are understood, the older generation feel able to commit to maintaining their attendance to the scheme. Furthermore, younger people may not need (or feel they need) this support and therefore it is possible they may take up physical activity outside of the scheme. This was however not monitored by the current research and further research would be needed to clarify this potential explanation (see Section 10.6).

Other barriers reported in the literature by older adults include lack of knowledge of how to get involved and access to places to be active (Crombie, Irvine, Williams, Slane, & McMurdo, 2004). This barrier is tackled by the scheme by providing pathways and education. Such education is embedded into the schemes, regarding issues such as how and why to exercise. The facilitators explain these issues during consultations and exercise sessions. The scheme structure also encourages social contact and interaction, through the provision of group exercise and coffee meetings. This provision may counter the behavioural norm of inactivity within this section of the population (Department of Health, 2004a). By engaging and observing exercise with other people in a similar age group their self-efficacy may increase through this vicarious experience (Bandura, 1986). Within interventions to promote physical activity, exercising in a group has been shown to be superior when compared to exercising independently (Burke et al., 2006; Dishman & Buckworth, 1996). This group exercise may potentially reinforce the patients' motivation and commitment to participation. Complex motives and factors (such as functionality, health fears and time) may explain why older adults are associated with successful attendance, in this and previous research into ERSs.

Gender

Table 7.1 shows the number of women and men who were recruited for the scheme. This gender split is typical of exercise interventions as it has been previously shown that men are harder to recruit, with women accounting for approximately sixty per cent of participants (for example (C. Gidlow et al., 2004; Harrison, McNair, &

Dugdill, 2005; James et al., 2008). However, previous research has found that a marked difference in completion between men and women in referral schemes, with women completing less frequently (C Gidlow et al., 2007; James et al., 2008). Table 7.5 shows that in this case compared to men, women were no less likely to successfully attend. Men and women are considered to have generally similar reasons for taking part in physical activity such as weight management and fitness (A. Taylor, 2006). Some differences however do exist. The social environment is thought to have greater importance for women, such as preferring to attend with friends, while men demonstrate confidence and competition as important determinants (Kilpatrick, Bartholomew, & Riemer, 2003). The nature of the scheme characteristics and social environment of Healthwise may have accommodated both genders and accounted for the similar success rates. The scheme flexibility in providing opportunities for people to exercise both in groups and individually on the gym floor accommodates these different preferences. The scheme also has both male and female facilitators, which accommodates both genders, by allowing the option to be looked after by someone of the same gender if this is preferred. Thus the nature of the scheme environment therefore may have allowed gender differences in success to be minimised.

Ethnicity

As can be seen from Table 7.5 there is an association between ethnicity and attendance. It has been highlighted elsewhere that ethnicity is considered a major mediating factor in health research (Hunt & Annandale, 1999). Differences in health between ethnic groups, that are independent of other health determinants (such as social economic position), have been documented (Nazroo & Williams, 2006). Racial discrimination, operating partly through residential segregation is thought to influence health pathways such as access to resources and opportunities (Goldman, 2001). There is very limited research regarding the influence of ethnicity on ERS completion. Age, gender and referral reason are the most regularly examined elements of a patient's profile within intervention research (Dugdill et al., 2005; Hardcastle, Taylor, Bailey, & Castle, 2008; A. H. Taylor et al., 1998). Previous research has focused on socio-economic status, however ethnicity was not considered (C Gidlow et al., 2007); this may be due to the limited ethnic variation in the region of study (Somerset). The current scheme actively targeted ethnic groups to minimise barriers,

providing a facilitated pathway to assist with access. The support provided by the staff and the wide diversity of those attending the scheme may have also helped to encourage members of these ethnic groups to attend. Table 7.5 demonstrates that those in the mixed ethnicity group, when compared to the white group are more likely to successfully attend. The small numbers of patients within this group however may limit the meaningful interpretation of this result. Previous research has found that those in the white category are more likely to attend interventions (C Gidlow et al., 2008). However this previous paper had little ethnic data. The current research adds insight into the influence of ethnicity due to the diverse nature of the population within the Greenwich borough. A review paper concluded that interventions for ethnic minorities and those on low incomes could be successful, but the conditions for success are not clear (W. C. Taylor, Baranowski, & Young, 1998). However, as previously stated, there is little research in this area within ERSs. It may be suggested that the Healthwise scheme, which is provided at five leisure centres based within the heart of areas populated by ethnic minorities (see section 3.6), may well have contributed to reduced barriers for individuals from these sections of the community.

Occupation

The occupational classification provides an indication of socio-economic position of the patients, by providing information on their employment status. There is a wealth of evidence demonstrating higher rates of premature mortality and various morbidities in the most socio-economically disadvantaged members of the population (Department of Health, 2003c). Those in the lower socio-economic groups are thought to place less value on and perceive less control of their health and health behaviour (Wardle & Steptoe, 2003). Consequently, higher socio-economic status is associated with a more health promoting attitude towards behaviour, health behaviours and risk behaviour (P. A. Cook, 2001). Table 7.5 shows that occupational categorisation was not associated with successful attendance. Social patterning of attitudes and beliefs towards health related behaviour are not considered to be as a direct consequence of material resources or inherited characteristics. Instead they become shaped by peoples surroundings and social interactions (Burton, Turrell, & Oldenburg, 2003). Therefore, sedentary behaviour becomes modelled as the norm and there is lower perceived social support for exercise amongst the lower socioeconomic

groups. The lack of differences in success between the occupational groups (table 7.5) may indicate that once engaged in the scheme, this culture of support between patients evolved. The social interactions centred on physical activity which could lead to satisfaction and physical activity being something to be proud of amongst those attending. Residents of deprived areas are more likely to perceive or experience access barriers to attending physical activity provision (Burton et al., 2003). The scheme is provided at a subsidised cheap rate, allowing access for individuals from some of these groups that may otherwise not have been able to undertake exercise at a leisure centre on a regular basis, due to financial reasons. The current findings indicate no difference in attendance between the occupation groups. This is particularly valuable in the light of the previous research regarding deprived area access and the characteristics of the Greenwich borough (see Section 3.1).

Referral reason

Table 7.1 displays the results regarding the medical conditions for which the patients were referred. Dugdill and Graham (2005) found that attendance was dependent on referral reason, with the referral reason overweight being associated with lower attendance, while post myocardial infarction referral reasons had higher attendance levels. James et al (2008) also found those who were overweight and those with mental health problems were least likely to take up an intervention opportunity. Table 7.5 displays the results for referrals reason. In the present study, when compared to those referred for cardiovascular conditions, those patients referred with pulmonary conditions were less likely to attend successfully. Pulmonary conditions such as bronchitis and emphysema involve a chronic obstruction of the flow of air through the airways, and the obstruction generally is permanent and progressive over time. For those patients with pulmonary conditions, reduced physical activity occurs as a result of chronic breathlessness and fatigue (Reardon, Casaburi, Morgan, Nici, & Rochester, 2005). Physical training is considered crucial in order to increase exercise capacity, functional status and associated quality of life. However, due to the progressive nature of the disease, where deterioration is evident, patients may find they are getting limited perceived improvement from the exercise; an issue that is emphasised particularly when compared to patients with cardiac conditions. Cardiac patients may perceive noticeable improvements in function from exercise (Hillsdon, Foster, &

Thorogood, 2005), which may therefore reinforce their attendance. The pulmonary patients may even compare their abilities and achievements with others on the referral scheme, such as those referred for different conditions. This comparison could lead to a decrease in subjective well-being and potentially play a part in diminishing the patient's motivation to continue.

Shortness of breath upon exertion is the most common symptom of pulmonary conditions. Some patients may feel fatigued upon exertion and this may be accompanied by coughing and wheezing. The person is likely to feel weak due to the associated gas exchange limitations (Nici et al., 2006). Patients with pulmonary conditions may therefore find exercise a very uncomfortable experience, which would subsequently limit the duration with which they can endure exercise. Furthermore there will be an impact of this uncomfortable experience on patients' enjoyment and therefore subsequent attendance. Pulmonary conditions are also unstable and they can be affected by seasonal variations, such as cold weather and are aggravated by the flu and chest infections (Glezen, Decker, & Perrotta, 1987). This may interrupt the patients' ability to attend regularly throughout the course of their referral programme, subsequently disrupting their motivation to continue (see Section 10.8).

Therefore a combination of the unstable nature of the disease and an associated decrease in motivation and increased frustration, may explain the lack of successful attendance by the patients referred with these particular conditions. Chronic respiratory disease is also associated with an increased risk of anxiety, depression and other mental health disorders (Dowson, Cuijter, & Mulder, 2004) further adding to the psychological barriers influencing them.

Previous research on referral reason has found that those referred for mental health and obesity were consistently associated with non uptake of referral. This however did not extend to completion (James et al., 2008), similar to the current findings. The Healthwise scheme embraced principals of motivational interviewing, as recommended by ERS guidelines (Department of Health, 2001a). Healthwise aimed to be client-centred in an attempt to initiate and facilitate change. These principles and the apparent trusting relationship with the facilitators may have lead to many individuals irrespective of referral reason feeling able to attend equally.

8.2: Model 2

Table 7.8 shows that successful attendance is associated with weight loss. The weight loss category refers to any weight loss achieved rather than staying the same weight or any weight gain. Evidence clearly supports the value of a modest weight loss goal to attain health and emotional benefit (Blackburn, 1995). The association between physical activity and weight loss is well established in the literature; physical activity on its own (rather than coupled with a diet plan) results in modest weight loss of around 0.5kg – 1kg per month (USA Department of Health and Human Services, 1996). The contribution of physical activity to weight loss can be largely explained by the direct increase in energy expenditure it produces. The greater the activity level, the greater the contribution to weight loss (Slentz et al., 2004). Prospective studies have shown that high levels of leisure-time physical activity or becoming fitter are associated with lower risk of substantial weight gain (Di Pietro, 1999; Fogelholm & Kukkonen-Harjula, 2000). There is also some evidence that active adults tend to embrace other positive health behaviours, such as consuming a healthier diet and maintaining a more favorable body composition (Blair et al., 1985). This may also contribute to the positive association between attendance and weight loss.

Furthermore, exercise is associated with an increase in basal metabolic rate (BMR). Dolezal and Pottegier (1998) found that BMR significantly increased after a ten week intervention period involving both endurance and resistance exercise. The increase in energy expenditure resulting from these factors may help facilitate weight loss.

Those people who are overweight are more likely to be in the least active sector of the population and are less likely to take opportunities to be active (Cooper et al., 2000). Therefore they are more likely to gain further weight as they have difficulty achieving energy balance. Observational prospective studies suggest a protective effect of physical activity on weight gain (Wareham, van Sluijs, & Ekelund, 2005). However, the magnitude of effect appears to be small and the direction of causality is not fully resolved as some studies indicate that obesity predicts physical inactivity (Mortensen, Siegler, Barefoot, Gronbeck, & Sorensen, 2006). The patients targeted by Healthwise are those who are currently sedentary and therefore at risk of further weight gain. The association between attendance and weight loss indicates that for those that attend

there are physiological benefits, suggesting a potential positive impact of schemes such as these at a public health level.

Although age was shown to be associated with attendance in Model 1 (Figure 7.1), age was not associated directly with weight loss (Table 7.8). This however may be explained by the finding that a higher level of activity is required to achieve weight loss as age increases. Williams and Wood (2006) suggested that men and women need to increase their vigorous exercise (running) equivalent to 2.7 km/week and 3.9 km/week annually to compensate for expected age-related weight gain. This may help to explain the lack of association between age and weight loss evident from the analysis. Furthermore resting metabolic rate also decreases with age, which is largely related to an age-related decline in fat free mass (Pratley et al., 1994). These factors may make it more challenging for older patients to lose weight even if they are attending the scheme successfully.

Table 7.8 also illustrates that those in the mixed ethnicity group, when compared to the white ethnic group, are more likely to be included in the successful weight loss outcome category. The small numbers of patients within this group however may limit the meaningful interpretation of this result. The small number within the group may have resulted in the significant association evident. There is limited previous data as to whether the association between activity and body weight differs between ethnic groups (BASES, 2007).

8.3: Model 3

Table 7.11 also demonstrates the association between successful attendance and a reduction in MAP. The majority of previous studies demonstrate a significant decrease in blood pressure following regular exercise (Wilmore, 2001). Reductions in blood pressure are seen both in those who are overweight and those who are normal weight (Whelton et al., 2002). Randomised controlled trials consistently demonstrate a blood pressure lowering effect of dynamic exercise training; a meta-analysis has shown that exercise training induced significant reductions in blood pressure (Cornelissen & Fagard, 2005). Factors that determine BP are cardiac output (CO) and peripheral vascular resistance (PVR). Mechanisms underlying the effect of physical activity on blood pressure have not been entirely clarified. A reduction in systemic vascular resistance (L. Nelson et al., 1986) or a decrease in cardiac output (Kinoshita et al., 1988) may be responsible. Decreases in plasma level of norepinephrine have also been consistently observed (Duncan et al., 1985; Kinoshita et al., 1988; L. Nelson et al., 1986) and changes in a number of humoral factors, such as insulin have been observed after exercise training (Jennings et al., 1986). There is also some evidence that active adults tend to embrace other positive health behaviours, such as consuming a healthier diet and maintaining a more favorable body composition (Blair et al., 1985). This may have contributed to the reduction in blood pressure. Previous physical activity intervention research has also found a noticeable decrease in blood pressure (S. Grant et al., 2004; Issacs et al., 2007; A. H. Taylor & Fox, 2005), providing experimental support for these findings.

It is important to highlight the implications for the individual patient and at a public health level of these blood pressure findings. The blood pressure reduction observed may be of moderate interest to those treating individual patients. However, a small decrease in the population average blood pressure level could dramatically reduce incidences of cardiovascular disease in communities and the population (N. R. Cook, Cohen, Hebert, Taylor, & Hennekens, 1995). Furthermore, a small reduction in blood pressure, leading to a reduction in the risk of consequent ischemic heart disease, could result in potentially significant savings to the NHS (National Institute for Health and Clinical Excellence, 2006b).

Table 7.11 shows that when compared to the unemployed category the skilled manual category had an increased likelihood to achieve a reduction in MAP. This is a finding with public health implications, due to the large number of manual workers classified as sedentary (Health Education Authority, 1995b). Research into the accumulation of exercise, such as performing short (8-10min) bouts throughout the day indicated that this could produce similar health benefits to one longer bout (Haskell, 2001). Research has indicated that a higher level (accumulated duration) of exercise resulted in a greater magnitude of BP reduction (Ishikawa-Takata, Ohta, & Tanaka, 2003). The additive effects of the occupational activity and the ERS structured activity may have lead to the significant result. A meta-analysis also revealed the possibility of a significant reduction in blood pressure in patients who do not lose weight (Whelton et al., 2002). This may help to explain the association between skilled manual and MAP, but not necessarily mediated via weight loss (Table 7.11)

Table 7.11 also indicates the significant association between weight loss and MAP reduction. This association of weight loss with blood pressure reduction has been documented elsewhere (V. Stevens, Obarzanek, & Cook, 2001). Exercise training alone has been shown to be effective in reducing blood pressure, however the addition of a weight loss programme also has been shown to enhance this effect (Blumenthal et al., 2000).

8.4: Quantitative Summary

In summary, these models highlight the associations of routinely collected data on patients, on the three indicators of success captured by the quantitative data; attendance, weight loss and MAP reduction (Figure 7.1). Gender and occupation was shown not to influence attendance, suggesting that the needs of the people within these groups may have been appropriately catered for. It is plausible that the scheme's environment, provisions and flexibility had accommodated these patients' needs equally. Notable associations with successful attendance however were age and ethnicity (mixed). It may therefore be beneficial for schemes to target older people as these results show they are more likely to complete the scheme. This is even more pertinent due to increase in co morbidities associated with age (see Section 1.5.1). The Healthwise scheme was situated in a diverse multicultural region (see Section 3.1), and the results indicate that ethnicity was associated with attendance. The location of the leisure centres within the community is likely to be a contributing factor to the differing attendance levels. The pulmonary referral reason was associated with non successful attendance; this suggests that more support is required in order for these patients to benefit fully from the scheme.

The associations displayed between attendance and the two outcomes of weight loss and MAP reduction indicate that for those who attend these benefits are more likely to be achieved. This reveals the impact the scheme can have on physiological outcomes and therefore the potential for a positive impact on public health targets.

See Chapter 10, sections 10.6-10.12 for implications of these findings.

Chapter 9: Mixed Methods Discussion

9.1: Combining methods

The quantitative and qualitative results are interpreted and combined in this chapter in order to address the aim of the research effectively. The results from the qualitative phase provide an understanding and conceptualisation of success from the three parties involved in the Healthwise ERS (i.e. patients, facilitators and referrers). The quantitative data is valued for its ability to explore the associations with success outcome measures. This quantitative data allows the relationships between collected data such as, demographics, referral reason and measures of success, to be identified. By examining the similarities and differences from the two types of findings, through a process of comparing and contrasting interpretations, more valid justifiable conclusions regarding the phenomenon of success may be presented.

Through this combination of quantitative data with qualitative findings the construction of the meaning of success, and how it is achieved, is more fully explained. The quantitative data offers patterns of associations and the qualitative data can begin to offer explanations for these associations and alternative explanations for these relationships and success. This integration offers insights into the concept that could otherwise not be revealed. Furthermore, it recognises the complexity of the ERS experience by embracing a holistic approach. Corroboration between findings produces a more complete knowledge, which is necessary to inform theory and practice (Creswell & Plano Clark, 2007; Hammersley, 1997) (see Section 4.1.2). This chapter considers the findings from both types of data in an integrated manner with existing literature.

9.2: Overview of combination

Consideration of the findings as a whole and as a broad picture highlights the multidimensional nature of the concept of success. Success embraces a wide range of notions (i.e. enjoyment, weight loss, making friends and knowledge) evident from the examination of different types of data and the perceptions from the different people involved in the process. The perceptions of success however have many shared components, this is evident from the combined model which centres on the concept of empowerment. The routine markers of success such as, levels of attendance, weight loss and blood pressure, demonstrate how success has been conceived by those developing and evaluating schemes. In practice the schemes impact is valued, observed and appreciated in a more holistic manner. Unpacking success as a concept could enable, in the future, more representative evaluations of the benefits of exercise referral. Consequently future scheme development may be adapted to augment other areas of success. Through the use of more uncontrolled research design in a functioning 'real life' ERS, this context specific evidence may be applied to future practice and research.

9.3: *Integration of key findings*

This section, through a concentrated inspection of the combined principal findings from the research, offers possible explanations and relationships.

The quantitative data highlighted the positive association between increased age and the likelihood of successful attendance (Table 7.5). The qualitative patients' findings incorporate a contextual theme termed scheme qualities, a property of this theme is labelled safety. It may be that scheme safety facilitated attendance amongst older patients because they value safety and security in order to have the confidence to carry on and therefore successfully attend the scheme. Older patients have previously reported that the fear of falling and aggravating medical conditions as a reason for not exercising (Lim & Taylor, 2005). Once these issues are dealt with in the scheme environment by having qualified staff with knowledge of medical conditions, it is plausibly that the older generation feel able to commit to completion of the scheme. Previous research by Stathi and Simey (2007) supports this safety finding, as participation in exercise was shown to decrease the fear of falling and subsequently increase the feelings of achievement (see Section 1.5.1). Safety appears to be of particular importance, not just to older patients but those who are apprehensive of exercise due to patients lack of experience, as is the case with many of the patients targeted by Healthwise. A link to safety is also seen in the referrers' account where they declare the importance of the procedures and practices that are in place. Feedback serves to keep the referrers informed of the wellbeing of their patients and reinforces the referrers future decisions regarding whether or not to make a referral (i.e. if the feedback details that the patients referred are progressing well in a safe environment, the referrer will have more confidence in the schemes ability to help others in the future).

Another concept emerging from the qualitative data , that helps to shed light on the age finding from the quantitative results, is knowledge (i.e. an increased understanding of health, physical activity and how to exercise). The older patients are often unfamiliar with the equipment in the gym environment and therefore require their knowledge to be updated through the teaching and demonstration of the

facilitators. This increase in knowledge is linked to confidence and helps to reinforce attendance for the older patients. Lack of knowledge has previously been reported as a barrier for older patients in research (Crombie et al., 2004). Knowledge is recognised by the facilitators who perceive that knowledge augments accountability, resulting in the patient taking responsibility for their physical activity levels. Therefore the importance of developing understanding and expertise is perceived as crucial from a number of sources. The concept of competence from self determination theory may help to clarify this finding, whereby a person has a need to interact effectively with the environment and express their capabilities (Ryan & La Guardia, 2000) (see Section 2.2.4). An integration of education within an intervention in this manner, appeared to bolster motivation for the patients involved. This may prove beneficial for all referred patients, in particular the older generation who may feel their up to date knowledge and understanding is more limited.

The quantitative results showed no difference between genders and successful attendance. A difference has however been demonstrated in previous research, which found that men were more likely to reach completion (C Gidlow et al., 2007). The previous study was however based in a rural community where potentially access could have been more of a problem for women, limiting their adherence. An alternative explanation for gender differences can be demonstrated regarding motives; for example the social environment is considered to be of more importance to women (Biddle & Mutrie, 2001). The qualitative results demonstrate that the potentially social nature of the scheme, may have enhanced the women's attendance. The Sedentary Women Exercise Adherence Trial (SWEAT) also attributed the effectiveness of the predominantly group based interventions to the social support element (Cox, Gorely, Puddey, Burke, & Beilin, 2003). The Healthwise schemes flexibility and scope of exercise options means that the different preferences for individual men and women alike may have been adequately catered for. The scheme involved different exercise options, such as group exercise classes and supervised gym sessions. The times of day available were also wide ranging allowing for individuals preferences.

The quantitative results (Table 7.5) showed that, when compared to those referred for cardiovascular conditions, those with pulmonary conditions were significantly less

likely to attend. Previous research may partly explain this association, as it has been shown that reduced physical activity may occur as a result of chronic breathlessness and fatigue (Reardon et al., 2005) (see Section 8.1- *referral reason*). Within this exercise referral context the qualitative results provide further personal insight into how people with these conditions experience exercise. One of the pulmonary patients felt they were restricted entirely by their breathing (see Section 6.1 – *attendance*). This then lead to a constrained attendance by the individual because he felt he could not progress as much as other patients with his exercise. A recent statement on pulmonary rehabilitation suggests that consideration should be given within an intervention to facilitate the pulmonary patients’ adjustment process (Nici et al., 2006), whereby patients need to be given help to diminish negative emotions, and be provided with a socially supportive environment. These patients may benefit from sessions with purely pulmonary patients to limit the comparison to other patients and negative feedback this could provide. Success for these patients therefore may be conceptualised slightly differently as the improvement they can experience in function is more limited due to the unstable and restricted nature of these conditions. Therefore exercise may purely lead to a more limited level of improvement in function in comparison to patients referred for other reasons. Functionality is a theme mentioned by (not purely pulmonary) patients as a consequence of participation evident in the qualitative results. Any limited functionality may well impact on a patient’s confidence and motivation and in turn contribute to the reduced level of attendance evident from the quantitative results. There is also likely to be a direct impact on the core category of the ‘joy of the thing’, due to the immediate discomfort felt as a consequence of breathlessness; these patients are less likely to experience the feeling good sensation and enjoyment associated with the core category from the patients perspective.

One noticeable difference regarding attendance between the two types of data collected was the impact of the social aspect of the scheme on participation. This information is not explicitly captured by the quantitative data. The qualitative data indicates that inclusion on a social level can either facilitate or hamper the attendance levels of the patient. Model 1 shows that the overall prediction from the variables included explains 59.7% (Table 7.4) leaving 40.3 % of the attendance that cannot be explained by the variables captured. Salient aspects from the qualitative research

such as inclusion and the impact of the facilitator may begin to offer explanation for the percentage that was not accounted for. A recent meta-analysis concluded that in fact the amount of contact and social support available (from other exercisers, health professionals, etc.) was crucial (Burke et al., 2006). This research by Burke (2006) stated that as the amount of social support increased so did the beneficial effects of the intervention. This meta-analysis included a home based condition (without contact); this was found to be the least effective. Home based activities have been endorsed as an alternative to leisure centre based schemes (Atienza, 2001). The benefits of the home based exercise recommendations are considered to be less barriers, (i.e. travel, finance, can arrange timing around commitments). The findings from the meta-analysis indicate that this is not the most pertinent factor, rather it is the social context that appears to aid effectiveness. This demonstrates that the impact of social aspects of the scheme may be critical for optimum scheme success. In addition, the importance of social influences are stressed within theory, for example within self-efficacy theory, through processes such as social persuasion and vicarious experience (Bandura, 2004) (see Section 2.2.2).

Furthermore an important factor not explicitly encapsulated by the quantitative data is the personal characteristics of the patient. It is important to consider the individual differences of the patients; their confidence and readiness to take up this level of exercise can have a direct impact on their ability to attend successfully regardless of the provisions offered. The transtheoretical model includes the concept of 'readiness' and highlights the changing nature of the concept and consequently the complex processes necessary for progression through the stages of change (Prochaska & Norcross, 2001) (see Section 2.2.3). The referrers recognise this readiness to change property as crucial to the patients' ability to experience the core category of taking control (Figure 6.3); only with this readiness to change will the patient have the ability to take control of their own lifestyle, with the capability to motivate themselves. Self determination theory postulates a similar relationship advocating the need to have autonomy and thus 'take control' in order to achieve intrinsic motivation (Prochaska & Norcross, 2001) (see Section 2.2.4). The readiness to change property arose from all three parties involved within the qualitative investigation. This begins to highlight how applicable and extensive an influence this property is perceived to have. Previous research has acknowledged the importance of an intervention to

recognise and incorporate the different stages of change, so the patients can be catered for individually (Prochaska & Norcross, 2001).

Model 2 (Table 7.7) shows the predicted probabilities from the explaining variables agree with the actual outcomes 67.4%. This model has weight loss as the outcome and attendance is included as an explaining variable. Although weight loss is captured as a measure of success within the routine data collection, it is rarely central to the perceptions of success given by those involved. The facilitators who obtain this data do see weight loss as a maker, but in fact consider lifestyle change to be the heart of success for patients (Figure 6.2). Central to this perception are the individual differences between the patients and how a degree of lifestyle change can be experienced in different ways. Weight loss may not be perceived by the facilitators as a success for all individuals, due to the differing aims and abilities. The patients consider weight loss within the property appearance; some of the patients acknowledge that without the scheme they would be worse off and would have in fact put on weight, due to their energy levels prior to their involvement and how increased age can result in weight gain (P. T. Williams & Wood, 2006) (see Section 1.5.1). This potential to impact on weight, could help the government with its recent aim to reverse the current increasing levels of obesity evident in society (Department of Health, 2008) (see Section 1.4).

The quantitative results demonstrate that successful attendance was significantly associated with weight loss (Table 7.8) and mean arterial pressure reduction (MAP), (Table 7.11). Reinforcing an early piece of research in this area which stated that for those that do attend supervised exercise interventions, there is a quantifiable 'health gain' (Singh, 1997). Attendance was perceived as an action strategy by the facilitators and patients alike. Patients were perceived to use attendance or non attendance as a way of handling the challenges and barriers faced when participating in the scheme. When faced with problems such as a severely low level of confidence, the patients may only attend the minimum the scheme has to offer or drop out entirely. Intervening conditions such as facilitator impact and inclusion may lead the patient to attend all opportunities offered, due to the satisfaction and feelings of acceptance associated with these themes. If the patient has managed to successfully attend, and therefore cope with the challenges throughout the course of the scheme, the

quantitative results indicate these patients can expect a significantly improved chance of achieving weight loss and a reduction in MAP. Therefore, these findings show the possible implication of schemes that are utilised effectively, on public health contemporary concerns such as obesity and hypertension (National Institute for Health and Clinical Excellence, 2006b, 2006c).

The quantitative results indicate that weight loss and a reduction in MAP are the consequences of successful attendance from the scheme (Table 7.8 & 7.11). This data allows the scheme to be evaluated in its entirety and can begin to indicate its effect at a population level. Changes from a single individual can also be inspected in this approach. The qualitative results consider consequences in a different yet comparable manner. The patients perceive a more comprehensive set of outcomes from participation. The physical outcomes incorporate functionality, pain reduction and appearance. Further scrutiny of these properties reveals how they are in fact linked to weight loss, despite the literal definitions and dimensions of the terms being different to weight loss. A reduction in weight may lead to improvements in functionality, pain and appearance, although the patients do not directly identify weight loss as an outcome. Factors associated with weight loss do emerge from the patients' conception of success. The patients' notion of the consequences of success extends to include psychological outcomes, on an individual level. This is noticeably different to the outcome data collected from the quantitative research, where the psychological and social benefits were not able to be explicitly captured.

There are many barriers to exercise and physical activity participation across population groups and it is apparent that a widespread change in activity culture is required. Sedentary behaviour has become reinforced through changes in transport, internet shopping, sedentary entertainment and energy saving devices (Kerr, Eves, & Carroll, 2003). Physical activity is seen to compete for time and is not perceived as a normal part of daily life for the general population. There is a need for a change in activity culture to create a society in which physical activity, both recreational and non-recreational, is an integral part. Individual and community level interventions are needed in conjunction with national media campaigns to increase awareness and policy led intervention. Interventions such as exercise referral can provide additional

support and reinforcement for some population groups and are therefore likely to contribute to an overall physical activity promotion strategy.

For ERSs to be successful they must be appropriate and accessible to the client group they intend to serve. Factors such as whether a service is welcoming in appearance, appealing to those who use it, non-threatening to a user's self esteem, and delivered by competent people, have been identified as influential in this context (Huxley, Hagan, Hennelly, & Hunt, 1990). Everyone has an inherent drive to maintain a positive view of themselves, thus, every effort should be made for self-enhancement and promotion and situations that could be potentially threaten the positive self-view should be avoided (Brooks & Lindenfeld, 1999). Therefore, if people perceive they are in poor physical condition, and have a low opinion of their athletic ability, they will look for the type of activity they think they can physically do without embarrassing themselves. A perceived environment of individuals who are young and in good physical shape is likely to be perceived as intimidating. It is therefore recommended that future schemes aim to provide separate classes and group gym sessions with other referral patients, since this is vital to allow the patients to feel that they fit in with the environment. Wherever possible, the pictures on the wall and music played in these sessions should reflect the patient base of the scheme, such as age, ethnicity or referral reason.

Sedentary behaviour appears to be the norm within today's society. Referral schemes are unlikely to make a substantial population – level contribution to the overall effort to tackle health inequalities. Furthermore they are unlikely to be able to effectively target younger sedentary adults in a preventative capacity. However, a well run scheme can provide a valuable role by providing support for some sections of the community who require a supervised, safe environment in which to take part in exercise. The benefits of such schemes extend from physical improvements, to social and psychological enhancement.

9.4: Conclusion: Contribution to Knowledge

This research aimed to elicit a comprehensive understanding of success, through an exploration of insights identified from the examination of routinely collected ERS data, with the perceptions of the experience and effectiveness from scheme providers, referrers and participants.

A review of the current evidence base exposed the increasing recognition that qualitative methods are required to complement quantitative methods as a means of exploring issues relating to developing an understanding of how interventions work in practice. Applied research, such as this, in 'real life' settings also provides evidence and goes some way in capturing the value of these interventions, for the people involved in their organisation and for those who receive the services. In order for future research to effectively capture and compare the extensive impact of interventions, the concept of success needed to be unpacked and understood.

The current research therefore endeavoured to understand ERS success in its entirety, within an applied setting, to enable a full understanding of both the processes involved and the perceptions of success. The research design recognised the complexity of the ERS experience and embraced a holistic approach. An uncontrolled population cohort method was used to facilitate this.

The quantitative and qualitative results were interpreted and combined to gain insight into the concept of success. The multidimensional nature of the concept of success was highlighted. Success embraced a range of notions (i.e. enjoyment, weight loss, making friends and knowledge) evident from the examination of different types of data and the perceptions from the different parties involved in the process.

By unpacking success as a concept these findings can now enable future, more representative evaluations of the benefits of exercise referral. Consequently, future scheme development may be adapted to augment these other areas of success. This context specific evidence should aid the application of these findings to future

practice and research. Furthermore, evidence has been added to the current evidence base regarding the value of exercise referral for public health.

From this research there are many wide ranging implications for future research and practice, these are explained in Chapter 10.

Chapter 10: Implications of Research

The current research reveals a number of implications for the future. There are implications for practice relevant to individual schemes, involving the refinement of procedures and protocols that are used. There are also implications for the development of new schemes and furthermore the development of future evaluation and research.

10.1: Social Interaction

The social interaction aspects of the scheme emerged as paramount and principal to the patients' experiences of the scheme and also featured as a noted consideration by the facilitators. The scheme incorporated many opportunities for social interaction, encouraging formal and informal communication. Group gym sessions, coffee mornings and a relaxed environment for staying and meeting with participants were provided. It is therefore recommended that future schemes aim to provide classes and group gym sessions with other referral patients, as this is vital to allow the patients to feel that they fit in with the environment. This provision of group gym and the group exercise sessions can be a positive step particularly when considering patients continued involvement. It has been shown that for some participants the social benefits provided the motivation for continued involvement, and a crucial factor to their enjoyment and commitment (Burke et al., 2006; Crone et al., 2005; K. Fox et al., 1997; Hardcastle & Taylor, 2005). Therefore the provision of group exercise sessions should be incorporated into schemes development in the future. This should be accompanied with encouragement for the patients to socialise. Opportunities for both formal and informal interaction will also allow this valuable supportive exercise culture to emerge for the patients involved.

10.2: Embedding Behaviour Change Principles

The adoption of a counselling style that was both client-centred and empathetic in this scheme, was beneficial. Facilitators allowed patients to talk about their own reasons for change and their perceptions, goals and values were allowed to emerge; the facilitator guided this self-direction. The facilitator attempted to make the goals more specific and manageable for the course of the scheme. A skill reinforced by the

NQAF which highlights the need for trained motivational communication to enhance delivery of the behaviour change objectives (Department of Health, 2001a). A recommendation for future practice would be for schemes personnel to be guided by behaviour change theory. The incorporation of psychological based aspects to interventions has previously been recommended particularly in an attempt to influence long-term change (Dugdill et al., 2005). It is also recommended that schemes provide ongoing training and tool development based on the principles of behaviour change. To be most beneficial, these should to be routinely incorporated and embedded into the protocol of referral schemes in the future.

10.3: *Facilitator Relationship*

The importance of the relationship with the facilitator was evident from the results. The patients and facilitators acknowledged this relationship as critical to the experience of the scheme. This complements the account made in the NQAF and previous research, which states that the importance of establishing relationships of trust with patients and that the facilitators role in this is critical (Department of Health, 2001a; Hardcastle & Taylor, 2001). It has also been demonstrated that the professional help and psychological support of the exercise provider can be the most facilitating factor for the patient's adjustment into the exercise environment (Stathi et al., 2004). Therefore a recommendation is made for future practice that the exercise provider within the scheme aims to support and continue with the patient through out their experience. A balance of trust and understanding should be established without reliance or dependency that may hinder independent exercise in the future. The qualitative patient findings highlighted the possibility of a form of reliance on the facilitators. Future schemes should be aware of this possibility of a crucial drop in confidence when the support of the facilitator is removed. These findings imply that this stage (graduation or completion) maybe be crucial in empowering independent exercisers in the future. It is recommended that schemes in the future incorporate education, social interaction and exit strategies to directly confront this finding.

10.4: *Holistic Benefits*

The findings from the qualitative phase of the research emphasised the experience of exercising itself, irrespective of the quantifiable outcomes. This finding is consistent with a previous postulation that that the act of exercising might be beneficial in and of

itself (Spirduso & Cronin, 2001). Most physical activity programmes focus on what can be achieved as a result of the prescribed exercise, and evaluation typically investigates pre and post intervention outcome measures. These findings consider the importance of how people feel whilst on the scheme, a finding which has previously been shown to be valuable in the experiences of people referred onto such programmes for health improvement and positive experiences from exercise (Crone et al., 2005). Furthermore, from the perspective of the patients' who experience the scheme, elements of enjoyment, increased knowledge and making friends have been demonstrated within their conception of success. These findings support previous research and strengthen the need for consideration of the complete experience by researchers and providers.

10.5: Patients as Individuals

Patients were supported to develop their own health and fitness goals and the facilitators work closely with them to monitor individual progress. By taking this holistic approach to supporting patients, which takes into account both physical and psychological well-being, and adapting exercise programmes to individual capabilities and needs, facilitators try to ensure that the patients often fragile self esteem is not threatened. Therefore schemes should attempt to consider each patient as an individual, referring back to the specific goals set and being aware of the particular apprehensions the patient has in relation to exercising. This supports the previous calls for a patient centred approach to scheme provision (Department of Health, 2001a).

10.6: Influence of Age

The success rates were particularly positive for older people in the community, suggesting that specifically targeting these people may provide positive health outcomes, as these people are more likely to attend and successfully complete the scheme. Therefore a scheme targeting older individuals may result in encouraging outcomes. Despite these success rates on schemes of this nature, this section of the community remain the least active on a population level (Department of Health, 2000b). Therefore continued targeting of this population is likely to be worthwhile and efficient. In order to increase scheme efficacy an approach could be to reduce the referral of those least likely to succeed (younger population); yet this proposal

essentially ignores rather than addresses the barriers and problems faced by this younger population group. From a long term public health perspective, if physical activity interventions such as ERS are to impede the growth of lifestyle diseases, targeting younger people prior to the establishment of disease must be a priority (Department of Culture Media and Sport, 2002). Therefore specific consideration of the needs of younger populations within schemes may in fact be the key to such schemes future long term impact on health. One associated problem with the ERS system is that people generally visit primary care regarding an existing difficulty, the likelihood of which increases with age. This could to some extent undermine the usefulness of this primary care pathway for preventative physical activity interventions in the long term.

10.7: Consideration of Ethnicity

Results from this scheme highlight the importance of ethnicity in relation to success. The scheme actively targeted ethnic groups and provided a facilitated pathway to assist with access (such as a leisure centre in the heart of the community). Support was provided by the staff and a wide diversity of ethnic groups subsequently attended the scheme successfully. Schemes in the future should recognise the unique characteristics of the differing ethnic groups and aim to cater for the specific needs and requirements of the people involved.

10.8: Influence of Referral Reason

The pulmonary referral reason was associated with non successful attendance (Table 7.5); this suggests that more support is required in order for these patients to benefit fully from the scheme (see Section 8.1- *referral reason*). Detailed protocols may need to be incorporated to deal with the unstable nature of these conditions and the break in routine that may be associated with them. These findings are comparable to research relating to mental health issues; the co morbidities associated with mental health problems and the many potential barriers to participation. A recent study found that despite all the benefits of exercise, particular problems with motivation and anxiety had to be overcome by this population (Crone & Guy, in press). It may be these populations require more specific support due to the nature of the conditions. A more concentrated counselling approach may need to be weaved into future interventions to deal with these added challenges.

10.9: *Consideration of Occupation*

When compared to the unemployed category the skilled manual category had an increased likelihood to achieve a reduction in MAP. Research has previously indicated that a higher level (accumulated duration) of exercise can result in a greater magnitude of BP reduction (Ishikawa-Takata et al., 2003). The additive effects of the occupational activity and the ERS structured activity may have lead to the significant reduction. Advances in technology have changed the workforce in recent years, resulting in a decrease in people doing skilled manual jobs and less physical work contained within these positions (M. Gregory, Zissimos, & Greenhalgh, 2001). Without the additive effect of occupational activity, a reduction in BP may be more challenging to achieve, highlighting the increasing need for intensive interventions. Conversely, an implication of this finding could be that to maintain a healthy work force employers should consider incorporating activity into the working day, to enhance the benefits of other exercise performed.

10.10: *Impact of Cost*

Research with the referrers indicated that they complemented the low cost nature of the scheme and its accessibility to people on low income/benefits. Furthermore the patients indicated financial issues as a consideration and the impact of a possible increase in price. Therefore schemes in the future who intend to access those sections of the community should attempt to incorporate the reduced cost and make the referrers aware of this.

10.11: *Consideration of Target Groups*

In recent years physical activity has become increasingly important within public health and priority groups have been identified: including children and young adults, older people and lower socio-economic groups (Department of Culture Media and Sport, 2002; Department of Health, 2004c, 2005b). The NQAF states that exercise referral interventions have a part to play in the overall public health plan (Department of Health, 2001a). Almost without exception, health and physical activity promotion strategies advocate prioritising the most socio-economically disadvantaged groups (Department of Health, 1999b). These findings indicate that these groups can be

equally catered for and incorporated into a scheme, where their specific needs are considered. A subsidised scheme with well developed support systems can address these issues. Schemes in the future should give consideration to the target population, to allow those people from these groups to be successfully integrated and catered for.

10.12: *Impact of Population Cohort Studies*

These findings begin to illustrate the strengths of population cohort studies for investigating exercise interventions. The retention of ecological validity is an asset as it allows scheme experiences to be considered. This challenges the NICE recommendations (National Institute for Health and Clinical Excellence, 2006d) for health professionals to only use ERS that are part of controlled studies. Study design such as population cohort studies should also be considered for a complete picture of the effectiveness that could be achieved. This recommendation complements previous calls for this type of design (Dugdill et al., 2005; C Gidlow et al., 2008).

10.13: *Multiple Methods*

Intervention research typically fails to evaluate the effect of an intervention on possible predictor variables or influencing factors, such as confidence and readiness to change. According to qualitative investigation it appears that the intervention may have an impact on these potential predictor variables which are not quantified routinely. In the future it may well prove insightful to incorporate some measures to highlight these possible changes from an intervention. The insights gained from the integration of the quantitative and qualitative findings, points to the value of the scheme as a whole for those that participate. An ERS provides a broad spectrum of valued outcomes from involvement. In order to portray a schemes impact in its entirety, these should not be neglected during evaluation. The importance of outcomes such as increased health knowledge, social enrichment and enjoyment for the holistic health and well-being of the community ought to be fully acknowledged.

10.14: *Implications Summary*

From a public health perspective, the observations in the current research have implications that reach beyond the setting of the Healthwise scheme. As a large well run exercise referral scheme, Healthwise can be used as an indicator for what might be achievable through similar types of interventions. In future schemes it would be beneficial for a measure and specific protocols to be developed to capture all benefits and aspects of success that arise from taking part in a scheme of this nature. By incorporating and communicating the perspectives from health professionals and exercise providers an evaluation of this nature would be more likely to capture success for those parties involved. These findings imply there may be a need for a fully comprehensive tool to be developed that standardises the data collection and evaluation procedures utilised.

Chapter 11: Limitations of Research

This chapter outlines the limitations of the current research and the impact of these. The present study has several advantages over some existing ERS research. Specifically it used data from a 'real life' ERS. The research design enabled high level of ecological validity and the option to influence the development and improvement of a functioning scheme. Nevertheless, there were several limitations that should also be considered.

11.1: Consideration of quantitative limitations

Utilising the facilitators to record attendance was preferable to relying on patients' self reported attendance. However, it is unrealistic to treat them as totally objective records of attendance. As much as possible the patients' attendance was recorded on the database, however this was sometimes done retrospectively and is it therefore plausibly to assume the data is not totally accurate. However other schemes have utilised this method of assessing attendance (C Gidlow et al., 2008). In order to obtain complete confidence in attendance data in the future, this should be recorded electronically (for example a swipe card on entry) and backed up with paper records. Even with these protocols in place the amount of exercise completed once the patient has arrived has not been effectively recorded. This would require a more sophisticated method of determining the patients' energy expenditure, which may prove more time consuming for those providing schemes of this nature. However a further strength of the current research is the incorporation of both weight loss and blood pressure reduction along with attendance to also indicate possible outcomes from the intervention.

Attendance in particular however does not take into account any physical activity that occurs outside of the prescribed exercise sessions. Therefore the possibility of habitual activity reducing when structured exercise was introduced (Sallis & Owen, 1999) was not considered. Furthermore, the impact of any exercise undertaken outside of the scheme may have contributed to the physical outcomes evident. The influence of this can not be separated from the direct impact of the scheme. A limitation shared

by the majority of ERS research. The measurement of habitual exercise can be problematic relying on self report measures or the readings from a constantly worn heart rate monitors or pedometers are possibilities. However, the NICE guidelines make no specific reference to the need for an objective physical activity measure (National Institute for Health and Clinical Excellence, 2006d). The lack of objective physical activity measure reinforces the importance of the physical measures, such as blood pressure and weight in determining the possible impact of an intervention.

Within the quantitative research binary outcomes were used for the success categories. For attendance, both success and partial success reflect those patients that reached the end of the scheme and attended their final assessment. The partial and success categories were grouped together allowing for a binary outcome measure. This meant that the data was simplified and the possibility of a greater depth of understanding by having precisely how many exercise sessions attended may have been overlooked. If attendance records could have been assumed to be accurate a continuous attendance variable may well have provided a more insightful outcome than the dichotomous comparison provided. The assessment of attendance at final meeting has also been used in previous research (Dugdill & Graham, 2005; Hammond et al., 1997)

The weight loss and blood pressure data contained a number of different readings for each patient, however this was not a steady number with some patients having two records and others up to eight. It was therefore decided for consistency to take the first and last readings obtained for each patient. In order to obtain a binary outcome the weight loss and blood pressure data was also reduced to success or failure. Any weight loss or reduction was considered to be a success, as oppose to staying the same or any increase. This may have missed any more complex relationships between the influencing variables and the fluctuation of these possible physical outcomes. However this constraint (of binary outcomes) was driven by use of binary logistic regression analysis. Binary logistic regression allows a range of independent variables, which can have different levels of data, and can therefore accommodate both categorical and continuous variables (see Section 5.5). This analysis can then consider the influence of these variables on the chosen outcome variable simultaneously (Kirkwood & Sterne, 2003). Therefore the constraints on the outcome

variables may appear to be a limitation, however this was necessary in order to utilise the strength of the analysis in relation to the independent variables used and was considered a justifiable choice.

The quantitative findings revealed a number of interesting outcomes for those patients from a mixed ethnic background. However the reliability of these results is questionable due to the numbers contained within this category. More research is required in this area to clarify the interpretation of these results. A study with large numbers within this group would begin to elucidate the associate between this ethnic classification and the possible outcomes from the scheme. Coupled with qualitative methods the reasons for these associations, if they prove consistent could be extracted.

Retrieving data for incomplete patient records was an issue within this study. Data was usually missing because patients' records were not entirely completed. This was due to the database crashing and therefore the facilitators could not input the data immediately. The records were then often filled out on paper to be transferred at a later date, this led to a backlog of records leading to incomplete data entry. This resulted in the exclusion of over four hundred records from analysis. Therefore in terms of future evaluation the choice of database and how it is organised may well have a large impact on the quality of data retrieved. A sufficient computer system will allow the accurate maintenance of the patients' records. The importance of each detail being captured by the facilitators has to be emphasised in order to promote consistency and limit missing data.

11.2: Consideration of qualitative limitations

For the qualitative analysis the sample was also opportunistic and consisted of those patients who were willing to talk about their involvement with the scheme. Therefore the perspectives are from those that have engaged well with the scheme, and are unlikely to represent the view of those patients who did connect. In spite of this the focus of the research was to investigate the concept of success and therefore these patients were deemed appropriate for the investigation.

The qualitative section of the study had a limited sample size which may be considered to be a limitation (see Sections 5.2-5.4). This may however be inevitable given it was a 'real life' study conducted in the community and therefore constrained by the procedures within the intervention. Additionally, other qualitative research in this area carried out by Hardcastle and Taylor (2001) and Crone, Smith and Gough (2005) has used similar sample sizes. A further limitation within the qualitative part of the study was the restricted participation of men. However research has previously demonstrated that typically men are harder to recruit, with women accounting for approximately sixty per cent of participants in evaluations (Harrison et al., 2005). This can also be seen in previous recent research with women accounting for 62% of participants (James et al., 2008). However exploring difference between genders is a potential area for future research.

Within the health professionals section of the qualitative work if the resources and time had allowed, a richer level of data may have been achieved from using face to face interviews rather than telephone interviews. Furthermore, there was no data regarding the referrers current level of physical activity or opinions on physical activity in general, a fact which may have influenced the concept of success of this exercise scheme (McKenna et al., 1998; McKenna & Vernon, 2004).

Furthermore, within this mixed methods study the grounded theory approach was adapted to allow for its inclusion. Whilst embracing the fundamental principles of grounded theory (see Section 5.2-5.5); adaptation was necessary to deal with the challenges of researching within the constraints of a functioning 'real world' scheme.

For example, pure grounded theory samples theoretically; meaning rather than being predetermined before the research, it evolves during the process (L. Richards & Morse, 2007). This sampling is based on concepts that emerge and appear to have relevance to the developing theory (Strauss & Corbin, 1998). The limited use of theoretical sampling (see Table 4.4) may have meant that opportunities for comparison of properties and concepts could have been missed. Despite this, these concessions were deemed to be appropriate in order for the number of focus groups and interviews to be carried out (see Tables 6.1.1, 6.2.1, 6.3.1). It was considered more beneficial to access a wide number of patients, facilitator and referrers to ascertain their perceptions than to be restricted by theoretical sampling and miss the opportunities to access a wide range of participants' views.

Due to the scope of this research it was not possible to investigate the physical activity levels of graduates of the scheme on a long to basis to determine the lasting influence of success. Undoubtedly, longitudinal data regarding sustained behaviour change is valuable but the issues of response bias and inaccuracy of self-reported physical activity are problematic. The Healthwise scheme aims send out follow up questionnaires to a proportion of patients to obtain data on activity and well-being. This data from these was not included because of the inevitable response bias and inadequacy of the physical activity and well-being data at baseline. This is a notable limitation of the research. Further research into the longer term outcomes of participation should be considered.

11.3: Consideration of combined limitations

The combination of quantitative and qualitative data within one study provides a number of strengths (see Section 4.1.2). This also potentially allows for a broad study due to this mix of methods and approaches. It could be argued that this is at the expense of a level of depth that may have been possible if one method had been used throughout.

A further limitation to consider is the sample used, which for both parts of the study is essentially a convenience sample. The sample was obtained from participants from one ERS. However, it is worth noting that for the quantitative analysis this was a substantial sample from a large London district. Furthermore the number of participants was sizeable and falls safely within the confines of numbers used for previous research (see Chapter 7). The study included a socio-economically diverse sample from a large geographical region. The use of one ERS does nevertheless inevitably places some restriction on generalisability.

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In summary, this research represents the development of investigation and evaluation into exercise referral schemes, but it is open to a certain amount of criticism. There are some weaknesses evident as a result of concessions made through constraints on resources or time. A positive outcome of this work is that it has enabled the identification of opportunities to build on the findings. Future research and practice may now be refined based on the insights gained from this thesis.

Chapter 12: Researcher's Reflections

12.1: Introduction to reflection

Inclusion of researcher's reflections will allow thoughts connections and insights into the learning and development obtained, as a consequence of the research process to be displayed (Maudsley & Scrivens, 2000). Table 12.1 shows some of the questions associated with reflective writing and thinking (adapted from (Brown & Rutter, 2007)).

Table 12.1

Questions to Develop Reflective Thinking

Description	Critical analysis	Evaluation	Learning
What did i do?	How did I do it?	How far and in what ways were my objectives met?	What does this mean for future practice
What happened?	Why did i do it that way?		What does this mean for my future values
	Why not a different way?		

Reflective practice is increasingly recognised as an important process within health care settings (Ghaye & Lillyman, 1997) and even within the context of exercise referral (Department of Health, 2001a). This section aims attempts to recognise and acknowledge the influence and biases of the researcher within the research. It is a reflection on my background and experiences as important determinants of the specific approach to the research. It also examines ways in which the process has influenced my outlook and this section is written in the first person.

12.2: Research process reflections

12.2.1: Familiarisation with ERS and contract research

My initial challenge was to familiarise myself with the areas of health policy and exercise referral schemes, through reading various policy documents and research. My psychology background meant these were the areas I was less confident in. I then travelled down to the Greenwich scheme in order to become familiar with how the scheme works in practice. I met the exercise providers (facilitators) and those in the steering group, such as members of the primary care trust and Greenwich Council. I then travelled out to the various leisure centres to see the surroundings it became obvious that some of the areas were very deprived, the housing and surroundings appeared to me to be run down and noticeably underprivileged. This had an impact on why and for whom the scheme was run. Allowing members of these communities to access the service was a key priority and seeing the areas first hand, allowed me to appreciate why this was a focus.

At first I found it difficult to understand the steering group meetings not knowing the protocols and procedures meant that I felt as first I had very little to offer and was not confident being involved with discussions. Although I had undertaken some reading I still felt detached from the area and thus unsure of where my role fitted in. The input and focus of the meetings changed overtime, as data came in I began to play a more integrated role and could explain and highlight results and implications for the parties within the group. My role as evaluator meant I would present interim results to the steering group on progress and procedures. It was in these meetings I became aware that despite everyone fundamentally working for the same aim, each group involved were looking for different thing. Whether the scheme was cost effective seemed important, questions were asked about if the scheme patients' subsequently attended their doctor less often, also the value compared to treatments such as obesity drugs and the continuation of the patients as members of leisure centre. It became apparent that all the information desired would not be possible within the constraints of the evaluation and negotiated decisions were made to allow for good quality data for some of the indicators and other measures may have to be addressed through other means and resources. The limits of the evaluation and the most pertinent use could be

predetermined to aid effectiveness. However, in a real life scheme such as this, adaptability is important due to challenges and issues that arise throughout the process

I attended a motivational interviewing two day course with the facilitators which helped me understand their role and the challenges associated with marrying motivation interviewing, pressures of time and the need to get the patients data dealt with and entered on the scheme database. My ongoing, hands on contact with the scheme from the beginning and numerous meetings and observations of patients led to a level of intuitive, implicit knowledge of the scheme and its culture. Knowledge of problems associated with day to day running of the scheme, such as patients cancelling and rearranging and the often very disruptive problems associated with computer problems. This brought to light the pressures on the facilitators and despite the preference for other measures such as the well-being scale in practice in a working scheme this is not always possible.

12.2.2: Methodological challenges

Previous to this research and evaluation the majority of my expertise and experience was as a quantitative research. I had made the decision to incorporate qualitative methods as I felt it was the best way to answer the objective of the research. However it became apparent that getting my understanding and appreciation of qualitative methods and eventually grounded theory up to the standard of a PhD was going to be a challenge. At first I had little faith in the method because of a lack of understanding and practice in its use. A course on NVivo helped to advance my understanding, due to the processes being brought to life and being able to see how other people research was organised and analysed.

Once my knowledge had developed enough I carried out my first focus group and could then beginning to look at preliminary analysis. Within the first focus group the patients appeared apprehensive at first almost waiting to answer questions, rather than willing to discuss. However, it did become a more relaxed discussion between them as it went on. The personalities and confidence levels of those involved became immediately apparent. One man was the most dominant he was white, seemed well educated and out spoken. One lady spoke the most at first and was eager to praise the

scheme. Another two ladies became involved as discussion progressed. One very quiet lady, Asian (seemed happy to sit back, wanted to say something about a particular facilitator) and one man (he had said when he first came in that he couldn't read and write well, could have been lacking in confidence). I had to be aware of this and encourage and nurture responses from all of those in the group. I had to attempt to provide a non-judgemental environment and produce a setting that was welcoming and inclusive. I would have a general conversation first to create an informal atmosphere for example about the weather or their journey over to the centre. I had to be mindful though that I was generally coming from a different background, for example I am younger and an avid exerciser which the patients may view as being intimidating and different from themselves. Being aware of this helped me to keep the conversation and my manner as accepting as possible.

12.2.3: Personal Growth and realisations

An important lesson throughout the qualitative research was to have an element of faith in the grounded theory process even though it was unfamiliar. A considerable amount of time and uncertainty was involved in this process, I felt the need to intensely scrutinise and justify every step which made my progress tentative and gradual. With practice I became more skilled and began to be able to draw out information and organise the principles with more proficiency. At first I attempted to separate the influences on success and the components of success however as I proceeded it became evident that these overlapped and I had to consider that I was enforcing a distinction that was in fact not evident directly from the data. This insight helped the progress of the emerging theory and I was able to move from a vast amount of free nodes to the beginnings of theory structure. As more data collection was carried out and incorporated the themes became more robust and definite. This was a steep learning curve and the process has changed how I would approach qualitative research and the value I give to the potential insight that can be gained from this method.

The impact on patients of exercise was a surprise to me I was expecting the health benefits, however the emotions in focus groups were intense and it seemed particularly evident how much the individual patients valued the experience and what

it actually meant to them. I had to be aware when analysing and considering the write up of findings that I was in fact constructing their construction of success and inevitably how I perceive and interpret the findings would be based on my personal views. Despite this I was aware of the need to minimise this influence by letting the patients speak for themselves and being aware of this through out the process. This insight I feel will be beneficial in how I approach future research.

Throughout the majority of the process I had to manage the needs of the evaluation contract and the PhD research. Sometimes the needs were complimentary as I could use initial data to both feedback to the steering group and also inform my research. At other points in the process the two were conflicting as the need to produce reports and presentations began to impact on the research and reading time available for my study. The final report although time consuming was valuable as it served as practice document, so I could become familiar with presenting some of the findings. However after the completion of this document, marking the end of the evaluation, my work rate and in depth input to the PhD hugely increased as this could now be my major focus. It was from this point that the PhD began to appear as an achievable goal as I could begin to compose and structure an outline of what would be included. This gave me insight into which areas would require the most work.

In order to understand logistic regression, I decided to both read text books about the technique but also experiment with trying out the technique early on to help grasp how it works. Due to my background in quantitative analysis and therefore my confidence with these techniques I managed to approach this fairly complex analysis with conviction and a level of determination to understand. After trying the data in different ways; experimenting with variables and methods (stepwise and enter), I reached a point where myself and one of my supervisors were content to take the data and output to gain reassurance from a statistician (Professor Morris), that my techniques and interpretation where correct. This meeting meant that I had renewed belief and enthusiasm to continue on and write up these findings. This was therefore valuable to maintain the momentum of my research.

Throughout the research process I had to make a conscious effort to stop myself being too deeply drawn into behaviour change and psychological theory, due abundance of

literature involved and objective to focus on success as a concept and how it is determined. I had to accept not all possibilities could be addressed, and that I needed to maintain a clearly defined research focus. The depth versus breadth decision kept re-emerging through out the course of the research and PhD. Constant evaluation and consideration was given to enable me to produce an achievable document; with adequate integration of literature, without diluting my findings and allowing them to lead the story of my research.

I was mindful throughout analysis and within the write up, to not approach the quantitative and qualitative as two distinct studies, but in fact different parts of the same study aiming towards the same objective. My integration of these was at first mechanistic because I felt I needed to amalgamate each portion of data, wherever I could. It was later on in the process that I could develop more free thinking and thus the ability to stand further back from the data and view the findings from a broader perspective.

The concluding portion of the PhD process was by far the most challenging only after completing a first draft, could I appreciate what other work was needed. Despite some sections being at a good level of completion, only with them all together could I appreciate the full picture. This process helped the integration and incorporated nature of my thinking and therefore the structure of final PhD.

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Appendices

Appendix A

Inclusion Criteria

DIAGNOSIS/ RISK FACTORS DESCRIPTION

ASTHMA _ Exercise induced without other symptoms Mild (ventilatory limitation does not restrain submaximal exercise)

CHD _ Post-MI. CABG, angioplasty, transplant, valve replacement, stable angina, permanent pacemaker, implanted defibrillator

CHRONIC FATIGUE SYNDROME _ Significantly deconditioned due to longstanding symptoms

OBESITY _ BMI greater than or equal to 30

COPD _ Without ventilatory limitation but would benefit from optimisation of respiration

DEPRESSION _ Mild to moderate

DIABETES _ With adequate instructions Type 1 regarding modification of insulin dosage depending on timing of exercise. Advice given on warning signs and symptoms.

DIAGNOSIS/ RISK FACTORS DESCRIPTION

DIABETES _ Lifestyle controlled Type II _ Medication controlled

FIBROMYLAGIA _ Associated impaired functional ability, poor physical fitness, social isolation, neuroendocrine and autonomic system regulation disorders

HYPERTENSION _ High normal blood pressure 130-139/85-89mmHg, not medication controlled Stage 1 hypertension – 140-159/

90-99mmHg, medication controlled

INTERMITTENT CLAUDICATION No symptoms of cardiac dysfunction

MILD BONE DENSITY CHANGES_ BMD greater than 1SD & less than 2.5 SD below young adult mean

DIAGNOSIS/RISK FACTORS DESCRIPTION

NEUROLOGICAL CONDITIONS _ System mechanics and correction of physical deconditioning, e.g.young onset Parkinson's disease (stable), multiple sclerosis

OLDER PEOPLE AGED> 65 YEARS _ No more than 2 CHD Risk factors
_ Not at risk of falls

OSTEOPOROSIS _ BMD minus 2.5 at spine, hip or forearm or greater than or equal to 4 on Fracture Index, with no history of previous low trauma fracture

OSTEOARTHRITIS _ Mild where physical activity will provide symptomatic relief

OA/RHEUMATOID ARTHRITIS _ Moderate OA/RA with intermittent mobility problems

SURGERY PRE AND POSTGeneral or orthopaedic

STROKE/TIA _ At least 3 months since Stroke Stable CV symptoms Mobile, no assistance required

STRESS/ANXIETY _ Mild to moderate (dependent on medication)

(Additional CHD Risk Factors) patients should display two or more CHD risk factors to be referred

DIAGNOSIS/ RISK FACTORS DESCRIPTION

FAMILY HISTORY _ Male under 55, Female under 60

HYPERCHOLE- STEROLAEMIA or LDL Total greater than 5.2 mmol/L

IMPAIRED FASTING GLUCOSE Greater than 6.1 mmol/

OBESITY _ BMI greater than or equal to 30

SEDENTARY _ One other CHD risk factor & not meeting current minimum recommendation of 30 mins of moderate intensity PA on at least 5 days of the week

SMOKER _ One other CHD risk factor & no impairment of respiratory function

Appendix B

(In press book chapter)

Key Concept XX: Physical Activity and Public Health

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Definition

The positive relationship between physical activity and health has been well documented (Biddle & Mutrie, 2001). As a result physical activity programmes and interventions included have been into public health policies during the last decade (Department of Health 2004), and an emergence of evidence-based practice in physical activity promotion within primary care (Crone et al., 2004). Most common are Physical Activity Referral Schemes (PARS) that involve health professionals (e.g. GP or nurse) referring primary care patients to an exercise provider for a programme of supervised physical activity normally within a leisure centre setting.

Referral to the PARS schemes is commonly for pre-existing health conditions such as cardiovascular (17.5%), metabolic (36.3%) and orthopaedic diseases (24.7%), whose outcomes are modifiable through regular exercise (Kesanieme et al., 2001). Patients referred include those with one or more coronary heart disease risk factors (hypertension, diabetes, obesity) as these are main causes of avoidable mortality (World Health Organisation, 2005).

[Insert figure 1 here]

Discussion

As the emphasis on promoting physical activity in primary care has developed, the number of PARS in operation in the UK has increased from 157 schemes (1994) to about 800 (2004) (Labour Research Department, 2004). Referring a patient from primary care to an exercise setting is an increasingly popular means for delivering physical activity to the population. Despite the abundance of PARS, the continued lack of robust evidence regarding effectiveness has set debate regarding their public health value.

PARS have been criticised their lack of high quality evaluations (Blamey & Mutrie, 2004). In measuring a scheme's success, researchers have been restricted to poor quality or inadequate data. Hence the success of PARS is often measured merely by its attendance levels (number of participants who commence, drop out or successfully complete the scheme). Although this method shows the pattern of attendance, it lacks issues of quality (e.g. experiences of patients), and the incomplete data do not provide full evidence regarding success (Gidlow et al., 2007). Holistic health evaluations should incorporate patients' opinions along with health and adherence measures (Dugdill et al., 2005). As a consequence rigorous evaluations that incorporate qualitative methods have been highlighted (Department of Health, 2001).

Case Study: Healthwise – a PARS, based in Greenwich, London

Key Findings:

- The Healthwise scheme improved confidence, motivation, well-being and knowledge of physical activity for participants
- Social benefits of confidence, enjoyment and satisfaction were reported
- Physiological measures show significant positive changes which if sustained may lead to health benefits
- The retired section of the community exhibited the highest success rate
- The facilitator's role was pivotal in providing support and motivation

Healthwise is a partnership between Greenwich Leisure Limited (GLL), Greenwich Teaching Primary Care Trust (GTPCT) and Greenwich Council. Single Regeneration Budget funding was used to develop this PARS across GLL leisure centres in the London Borough of Greenwich. The scheme commenced in January 2005 at five leisure centres in Greenwich with exercise options provided at a subsidised rate to referred patients (gym-based sessions, circuit training, water-based aerobics and exercise to music sessions). A facilitator was assigned to the patient to assess/oversee progression. The scheme's duration was 12-26 weeks, depending on the patient's progress. Aimed at the Greenwich population, Healthwise worked to reduce health inequalities by providing affordable/accessible opportunities for people to become physically active and improve their health and well-being.

A mixed method evaluation of Healthwise (January 2005 - March 2007) incorporated action research to provide best practice guidance for the continual development of the scheme. The qualitative methods included descriptive observation, focus groups and interviews, and the quantitative methods included routinely collected data: age, gender, ethnicity, occupation, attendance, referral reason, and pre and post measures (weight, well-being, blood pressure).

The qualitative data comprised 4 focus groups (13 women, 4 men patients); individual telephone interviews with 7 referrers (2 doctors, 5 nurses); and individual face to face interviews with the 4 facilitators of the scheme. The findings highlighted the social benefits perceived by the patients e.g. *'The people you meet too, made so many friends and we get on well with everybody'*. Patients also demonstrated confidence, enjoyment and satisfaction, which have been previously highlighted, in qualitative research, as positive mental health benefits from participation in exercise (Crone et al., 2005). Patients also expressed increased awareness and knowledge of health behaviour: *'Well I would still carry on, I think I know enough about it now to do that'*, which contributes to long term behaviour change. Facilitators also expressed the social aspect as important: *'They come for the interaction a little more than they come for the exercise'*.

Facilitators placed an importance on the patient's readiness to change: *'a lot of the time it's not what we give them but whether or not they are willing'*, and the facilitator's role in providing support and motivation: *'...a lot of them like to feel cared about don't they? like someone is actually taking an interest for them'*. Facilitators were trained in Motivational Interviewing, a noteworthy strength of Healthwise. Referrers (health professionals) further complemented the low cost nature of the scheme and its accessibility to patients with low incomes.

The quantitative evaluation comprised 1315 complete data records. The 57% success rate (patients that reached the end of the scheme and attended their final assessment) is encouraging in comparison with previous research (Hammond et al., 1997; Doust, & Webborn, 1998). A comparison of those attending the scheme and the general Greenwich population showed effective targeting of ethnic groups, with a large percentage of unemployed and retired patients. This is important: the health damaging behaviour of inactivity is not equally distributed across the population, where certain groups tend to be less active and also report the poorest health (Department of Health, 2003). Socio-economic health inequalities have been observed with poor health in the

lower socio-economic groups (Wagstaff, 2002), therefore PARS have potential to target these sections of the community and contribute to reducing health inequalities.

The retired section of the community provided the highest success rates (59.1% completion and lowest failure rate of 32.9%). Success improved with age showing a steady increase up to 85 years old. This is critical in the light of the Greenwich borough statistics which indicate that only 7.5% of the over fifty five year olds are physically active. Previous research supported that PARS were more effective for the older segment of the population (Dugdill et al., 2005).

Statistically significant differences in body weight and mean arterial pressure were found before and after participation in the scheme. As these reductions were small, the individual health benefits might be questionable. However, positive changes could lead to health benefits if the behaviour change is sustained in the longer term, and small reductions in blood pressure reduce the risk of ischemic heart disease and result in savings to the NHS (NICE, 2006). This demonstrates the potential of such schemes for the whole population.

Conclusion

Healthwise has successfully targeted and achieved encouraging attendance rates among patients at risk from health inequalities, helping the deprived sections of the community. Qualitative findings revealed good patient experience about the benefits (improved confidence, motivation, well-being, knowledge of physical activity). Physiological measures demonstrated significant changes in a positive direction. Both the participants and providers of Healthwise rated it positively.

PARS can enhance the holistic health of individuals. Three points require consideration:

- Mixed method evaluations, in addition to the action research process employed within Healthwise, present an innovative case study approach. Hence they are useful to the evaluation of such schemes. A quantitative approach quantifies the referral and attendance of certain groups, or the degree of physiological change achieved. A qualitative approach provides in depth understanding of the patient's journey and how it is influenced by other stakeholders. Combining both approaches provides a comprehensive picture of exercise referral schemes.
- The use of physical activity interventions in primary care for health improvement is supported by population based cohort studies (Gidlow et al., 2007), but follow up of the scale/extent of such improvements over the longer term is required. This would determine its impact on the patient's subsequent post completion lifestyle, its decay rate, and whether 'booster' sessions are required and their timing.
- Managing chronic conditions (WHO 2005) is premised on self-management and inter-professional working between government, private and voluntary sectors. This includes the successful screening of individuals likely to benefit, their referral, follow up and completion of such schemes, as well as the maintenance of the newly developing lifestyle changes that have been

acquired. The interlinked chain of tasks means that physicians, nurses, exercise professionals, leisure managers, behavioral scientists and patients have to work together effectively (El Ansari & Phillips, 2001) .

Appendix C

Interviews with patients

Question
You are currently taking part in an exercise referral scheme, can you start off by telling me about how you came to be on the scheme?
Can you think back to the start, what were you expecting to gain from the scheme?
Can you describe your experiences of the scheme?
○ What was most memorable?
○ What was most nerve racking?
We are interested in how people view success. What do you see as success for people in the scheme?
Do you think the scheme has been a success for you?
○ Why do you think that?
What would you say influences success for people in the scheme?
○ Why do you think that?
In your opinion, are there any particular influences on success?
○ Why
We are interested in what people think about different aspects of the scheme? What do you think about;
○ Your initial introduction?
○ Your facilitator?
○ The referral process?
○ The choices available?
○ Customer care?
○ The environment?
○ Other people?
Could any of these be enhanced?
○ If so how?
Did you have any problems within your time at the scheme?
○ Is there anything that you think works well?
○ Is there anything that you think could be changed or improved?
I'd like you to think back to when you first started, how did you feel in yourself then?
○ Why do you think you felt like that?
○ Do you feel like that now?
(Depending on how long they have been in the scheme)

(if drop out, was money a barrier to you finishing the scheme?)
Do you intend to continue exercising in the long term?
Do you have any comments regarding the delivery of the programme?
To help us improve this programme, what recommendations for the future would you suggest?

Appendix D

Interviews with facilitators

Question
Can you describe your involvement in the Healthwise scheme?
○ What exactly is your role?
What are your opinions about the Healthwise scheme?
○ Referral process
○ Communication
○ Patient care
What do you see as success for people in the scheme?
How would you define success?
What would you say are the most important elements of success?
○ Why?
What things would you say influence success either to be successful or unsuccessful? for the patients?
What would you say has the biggest impact on being successful or unsuccessful?
○ Why
Did you have any problems within your time at the scheme?
○ Is there anything that you think works well?
○ Is there anything that you think could be changed or improved?
To help us improve this programme, what recommendations for the future would you suggest?

Appendix E

Interviews with Referrers

Question
Can you describe your involvement in the Healthwise scheme?
○ What exactly is your role?
○ How did you hear about the project
○ Did you receive adequate information regarding the scheme?
What are your opinions about the Healthwise scheme?
○ Referral process
○ Communication with Healthwise
○ Patient care
○ Facilitators
Prompts
➤ Have your opinions always been the same?
➤ If not, how have they changed?
Did you have any problems with the referral process of the scheme?
○ Is there anything that you think works well?
○ Is there anything that you think could be changed or improved?
What were you hoping the patients would achieve following their referral onto Healthwise?
Do you know whether your patients have achieved this?
How would you define success on the healthwise scheme?
What do you think influences success for the patients?
○ Why do you think this?
In your opinion, are there any particular influences on success?
In your opinion have your patients been successful?
Have you had any feedback from the patients you have referred?
○ If so what has this been?
Have you had any feedback from the facilitators regarding the patients you have referred?
○ If so what has this been?
Do you have any comments regarding the delivery of the programme?
○ Is there anything you think works well?
○ Is there anything that you think could be improved or changed?
To help us improve this programme, what recommendations for the future would you suggest?

Appendix F

(Example information letter)

Dear

Thank you for taking the time to read this information letter. I would like to invite you to take part in an evaluation of the Healthwise Exercise Referral Scheme. This evaluation is being carried out by the Faculty of Sport, Exercise and Social Care, University of Gloucestershire on behalf of the Healthwise organisers, in Greenwich. This information sheet is designed to inform you about the project because it is important to understand why the study will be done before you decide whether or not to take part. Please ask us if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

The purpose of the study is to investigate the experiences and perceptions of people who have participated in the Healthwise ERS. Finding out about your experiences will help the scheme organisers understand more about the different aspects of the project that are enjoyed by participants and help to develop and improve the scheme in the future.

Why have I been chosen?

You have been asked to participate in this project because you have been involved in the Healthwise ERS.

Do I have to take part?

Taking part is voluntary. It is up to you whether or not to take part. Even if you decide to participate you are free to withdraw from the study at any time without stating the reason. If you do decide to withdraw after the focus group has taken place, your input will not be used for the study and the audiotape destroyed.

What will you be asked to do if you decide to take part?

Consenting participants will be asked to be involved in a focus group, which will last approximately an hour. The focus group will take place at the Waterfront Leisure Centre. It will involve questions related only to your experiences, attitudes and opinions of the Healthwise ERS. You will be informed to answer only the questions that you want and that there are no right or wrong answers, it is only your experiences of the project that are of interest. To ensure that we have an accurate account of your experiences and opinions the interview will be audio taped but this should not hinder our discussions in any way.

What are the possible benefits to taking part?

The information derived from the study will help to evaluate the Healthwise ERS, finding out and understanding your experiences will help to make any necessary changes to improve the programme in the future. Please be assured that any information that you choose to tell us will be anonymised, by the principal researcher (the interviewer), to prevent your identification. This is to ensure that you feel comfortable telling us about your experiences and opinions.

What will happen to the results of the study?

The results of the study will be written up into a report for the organisers of the project. It is hoped that finding out about your experiences will help the organisers make improvements to the project to ensure that other participants experience and enjoy being a participant in the scheme, in the future. We also intend to publish some of the findings in a PhD Thesis and in professional journals to share the findings with other professionals and researchers who are working in this area. It is hoped that this will help develop good practice in other Exercise Referral Schemes around the country.

Who is organising the funding for the research?

Hayley Mills from the University of Gloucestershire is undertaking the evaluation, under the supervision of Dr Diane Crone. This is funded by Greenwich Leisure Limited, Greenwich Primary Care Trust and the Woolwich Development Agency.

Who has reviewed the study?

The University of Gloucestershire ethics committee have reviewed the study

When and where should I go?

A Focus Group will be held at the Waterfront Leisure Centre (Woolwich Highstreet, Woolwich, SE18 6DL)

Thursday 17th August – 10:30 am

If you need further information on this study, please contact the chief researcher:

Hayley Mills
Faculty of Sport, Exercise and Social Care
University of Gloucestershire
Oxstalls Campus,
Oxstalls Lane,
Gloucester
GL2 9HW

e-mail: redacted

Tel: redacted

Fax: redacted

Please keep this information sheet for future reference. You will also be asked, should you choose to participate in the study, to complete an informed consent form. You will be provided with a copy of this form for your information and future reference, if required.

Appendix G

CONSENT FORM

Title of Project: An investigation into the perception and measurement of success in the Healthwise Exercise Referral Scheme

Name of Researcher: Hayley Mills

Please initial box

1. I confirm that I have read and understand the information sheet dated

for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time,

without giving any reason, without my medical care or legal rights being affected.

3. I understand that the interview will be audio taped for the purposes of an accurate account of my experiences and for data analysis purposes.

4. I agree to take part in the above study.

Name of Participant

Date

Signature

Hayley Mills, Researcher

Date

Signature

Appendix H

Department: Public Health
Telephone: 020 8293 extn redacted
Fax: 020 8269 extn redacted
Email: Redacted

Greenwich 
Teaching Primary Care Trust

Public Health Directorate
31-37 Greenwich Park Street
Greenwich
London SE10 9LR

17 January 2006

To:
University of Gloucestershire,
Research Ethics Committee.

Dear Sir/Madam,

Qualitative Evaluation of Healthwise; a Physical Activity Referral Scheme run by Greenwich Leisure Ltd.

Please accept this letter as confirmation that Greenwich Teaching Primary Care Trust (GTPCT) are in broad agreement with the intended proposal to perform a *Qualitative Evaluation of the Healthwise Exercise Referral Scheme*. As you know, the recruitment to this research will be using sampling frames that are held by Greenwich Leisure Ltd. and not the Primary Care Trust. This means that the NHS has only a secondary responsibility to ensure an ethically sensitive approach and good research governance. I underline that GTPCT is not the custodian for any of the data that is intended to be used in the study. In many respects this study could be considered good practice in terms of seeking the views of clients attending a service to the public. These features of the study mean that approval from the local (NHS-sponsored) Medical Research Ethics Committee is not formally required. As a "teaching" PCT we encourage research in a socially responsible way and are content that the University Research Ethics Committee continues to ensure that this study is approached in an ethical manner.

We would recommend that the researcher seeks further guidance over the structure and content of the participant information sheet and consent form. It would be useful to ensure that people on the scheme all have an equal chance of participating rather than only those people who have completed the programme. Using this cohort-based approach is likely to reap useful information about access and applicability including the reasons why some people do not complete the programme. It would also be useful to direct some of the enquiry to the sustainability of activity and longer term outcomes in terms of general health parameters.

We are interested in the results of this study and can probably advise the researcher over some issues if contacted at an early stage however, as stated, the primary client is Greenwich Leisure Ltd.

Yours sincerely,

T Dyke
Consultant in Public Health

Appendix I – Change Data

Table 1: Physiological pre and post measures

	<i>Weight (kg)</i>		<i>MAP (mmhg)</i>	
	Median	Interquartile range	Median	Interquartile range
Pre	86.00	29.00	99.98	16.58
Post	85.50	29.00	99.00	15.00

Wilcoxon signed rank test revealed significant change for both weight ($p < 0.01$) and MAP ($p < 0.001$).

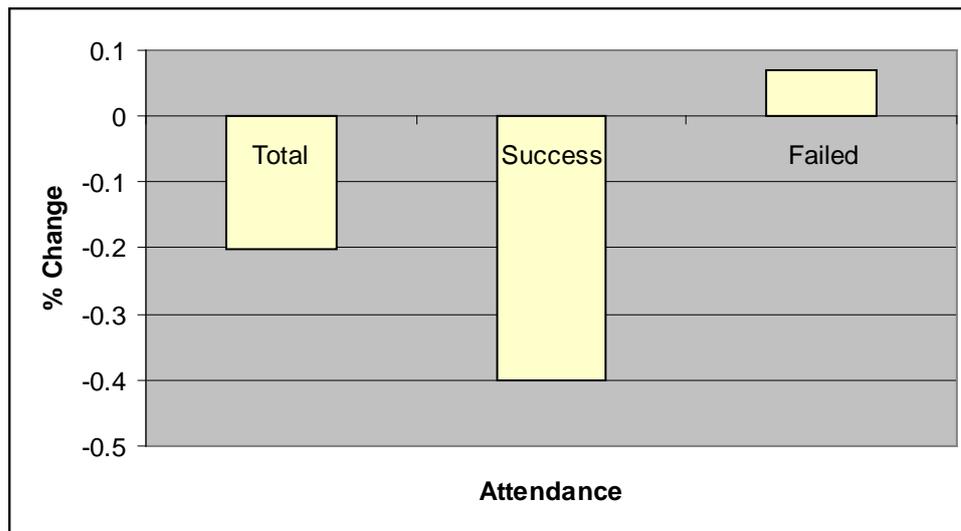


Figure 1: Percentage change in the weight (total sample and attendance categories)

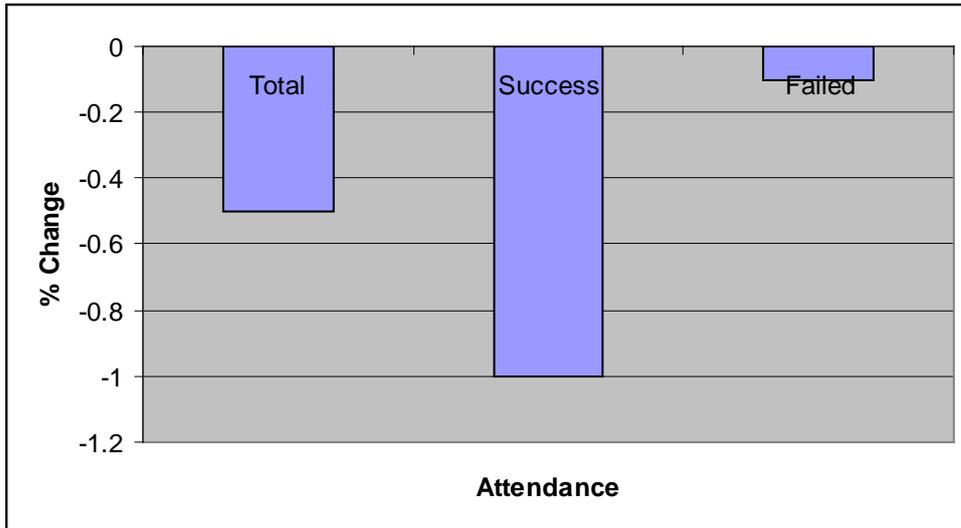


Figure 2: Percentage change in the MAP (total sample and attendance categories)

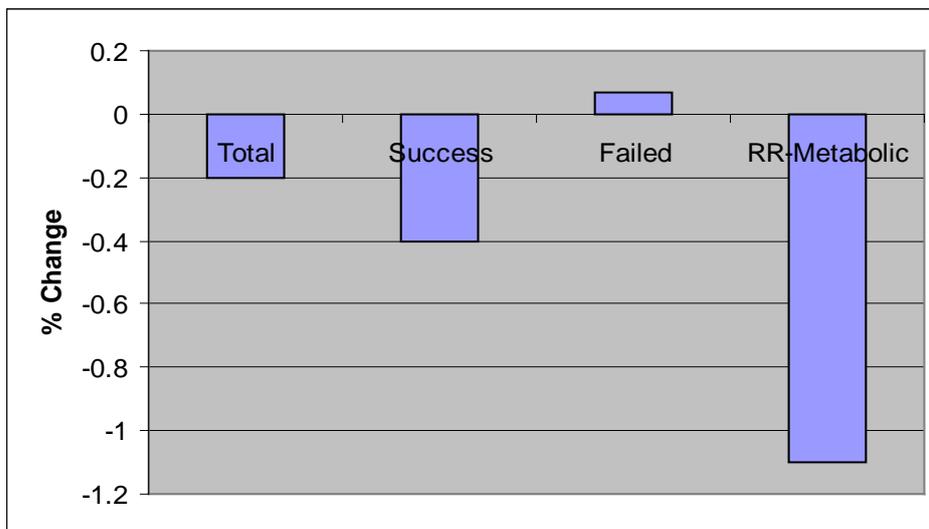


Figure 3: Percentage change in weight for total sample, attendance categories and the metabolic referral reason.

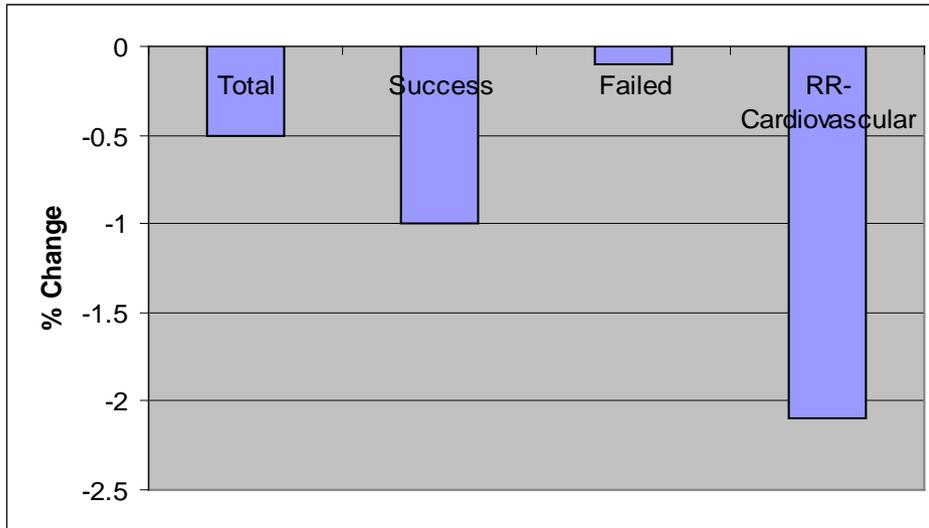


Figure 4: Percentage change in MAP for total sample, attendance categories and the cardiovascular referral reason.

Total sample:

Pre scheme 423 patients above high blood pressure threshold (140/90 mmhg)

Post scheme 361 patients remain above threshold.

Success sample:

Pre scheme 235 patients above high blood pressure threshold (140/90 mmhg)

Post scheme 179 patients remain above threshold.

Table 2: Correlations between percentage change in weight and MAP.

			Age	weightper	MAPperR
Spearman's rho	weightper	Correlation	.007	1.000	.080(**)
		Coefficient	.802		.004
		Sig. (2-tailed)			
		N	1315	1315	1315
	MAPperR	Correlation	-.029	.080(**)	1.000
		Coefficient	.291	.004	
		Sig. (2-tailed)			
		N	1315	1315	1315

** Correlation is significant at the 0.01 level (2-tailed).

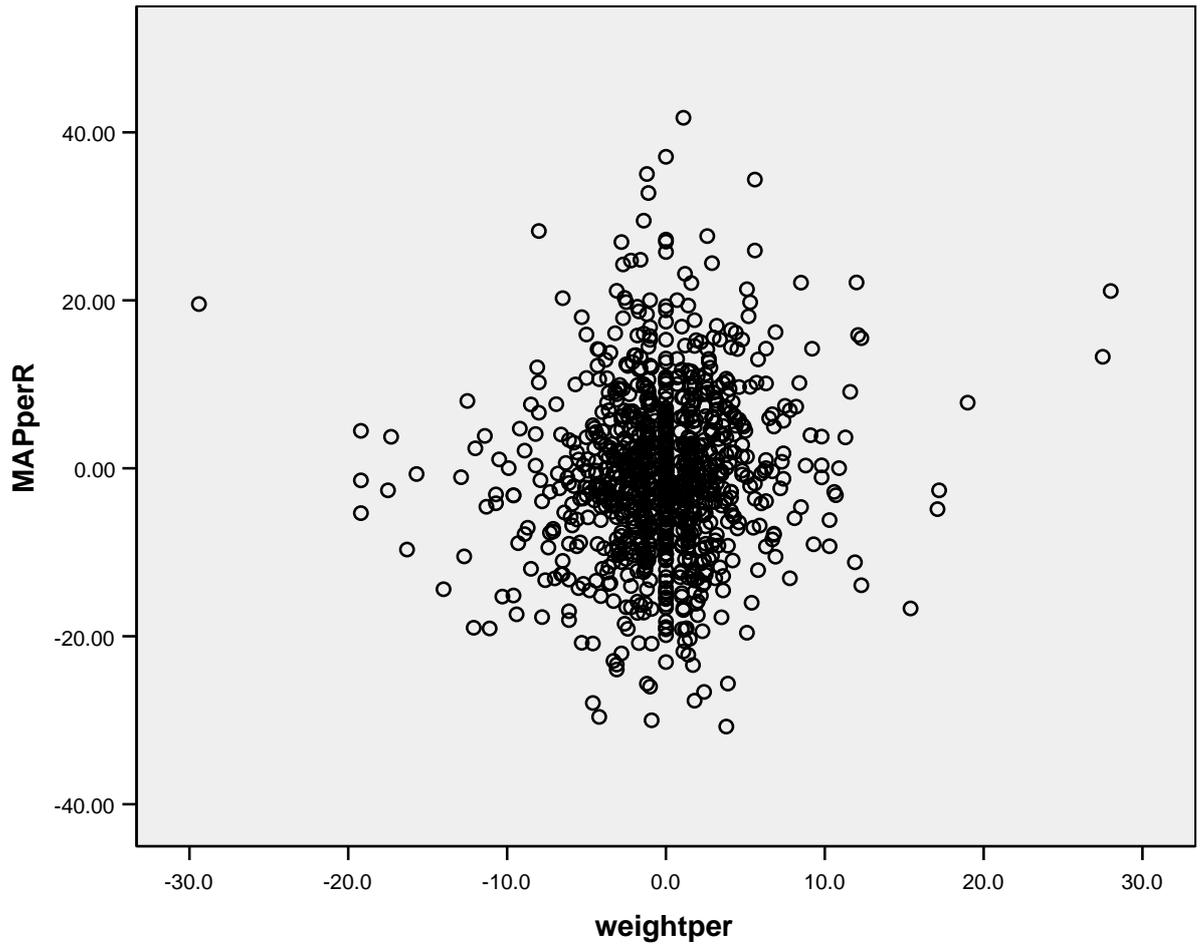


Figure 5: Correlation between percentage change of weight and MAP