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**Understanding *Success* in the
Green Prescription Programme:
A Qualitative Investigation into Patient
Perspectives on Physical Activity**

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Abstract

Background

Exercise referral programmes (such as the Green Prescription community programme) are a popular and effective way of increasing the physical activity of primary care patients who at risk of, or diagnosed with, chronic disease. The perspectives of patients in regards to their health behaviours are important for refining the strategies employed in such interventions.

Aim

This study aimed to explore how patients participating in the Green Prescription programme understood the concept of success in terms of their physical activity and health. It also aimed to demonstrate how this understanding may change over time.

Research Design

Qualitative longitudinal data was collected from fourteen patients attending the community programme. This was achieved by using two phases of semi-structured interviews conducted five months apart. The verbatim interview transcripts were analysed using thematic analysis, and them triangulated with routine information recorded on Green Prescription patient registration forms. This information was then used to generate themes.

Findings

When considering goals for the future, patients described success in terms of avoiding or managing disease states and clinical measures such as blood glucose level or blood pressure. In the second interviews, these factors were rarely considered as achievements, even when progress had been made. The themes relating to establishing physical activity as a habit and improvement of functional ability and physical fitness were described as experiences of success and achievement in the second interviews, even when they had not been specified as goals in the first interviews.

Conclusion

The *conceptualisations* of success more likely to lead to *experiences* of success may be of value when promoting physical activity among inactive primary care patients referred to programmes such as Green Prescription. These findings suggest that framing physical activity goals around improving functional ability and physical fitness are more likely to result in patients embracing a more active lifestyle. Conversely, goals that focus on clinical measures and the threat of disease are potentially detrimental to behaviour change attempts.

List of Abbreviations

GRx	Green Prescription
GP	General Practitioner
RCT	Randomised Control Trial
SPARC	Sport and Recreation New Zealand

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Chapter One: Introduction to Background Information

1.1 Introduction

This thesis analyses how it may be possible to successfully promote physical activity within primary care referral programmes. The researcher proposes that such success can be achieved by incorporating patients' understanding of success into lifestyle counselling and goal setting strategies. In light of the fact that a large proportion of adults living in developed countries engage in an insufficient level of physical activity, it is imperative and sensible to hone the effectiveness of interventions at the public health, primary care level. A primary health care facility is an opportune setting in which to identify patients who could benefit from a more active lifestyle. It is also an ideal setting in which to refer them to supporting interventions that facilitate physical activity participation. In New Zealand, one such referral intervention is the Green Prescription (GRx) programme. Using qualitative research methods, this thesis explores understandings of success in relation to physical activity and health from the perspective of patients who attend the GRx community programme. This chapter presents background information on the GRx programme and similar interventions. It also illuminates the significance of public health, and the role of primary health care, in promoting physical activity.

1.2 The Green Prescription Programme

The effectiveness of exercise referral programmes can be cited back to a clinical trial in Britain that showed evidence of beneficial effects on cardiovascular disease, depression, anxiety, osteoporosis and hip fractures (Campbell et al., 1985). New Zealand quickly heeded the results of this research, and the Hillary Commission¹ introduced GRx on a nationwide scale following the findings of a 1995 Randomised Control Trial (RCT) (Adrian Bauman et al., 2003; Hillary Commission, 1991; Pringle, 1998; Swinburn et al., 1998a). The study demonstrated that receiving a written exercise prescription, in addition to receiving verbal advice, leads to a greater increase in physical activity than accepting verbal advice alone (NHF, 1995; NHF, 1996). The seven-week trial involved 491 inactive primary care patients from Auckland and Dunedin, all of whom had previously received verbal advice from their General Practitioner (GP) to increase their physical activity. Patients were subsequently randomised and put into either a control group (receiving no further intervention), or into an intervention group. This intervention group received their practitioners' advice written down on the GRx form, in addition to contact details for an activity information telephone line. A total of 456 participants provided full follow-up data (intervention n=218; control n=238). Both the intervention and the control group had a higher proportion of active participants who had increased their total activity time by 156 minutes per fortnight at the six week follow-up. The number of inactive patients in the GRx group decreased from 49% to 14%, compared to a decrease from 44% to 23% in the group that only received verbal advice. When the intervention group was reviewed after eleven months, 80% of patients reported that they had initially increased their activity and 47% of them were continuing to do so (Swinburn et al., 1998b).

¹ The Hillary Commission is a former public and government funded organisation responsible for the physical activity and sport sector that is now known as Sport and Recreation New Zealand (SPARC).

The GRx initiative is now overseen by the government agency Sport and Recreation (SPARC) and delivered through a network of Regional Sports Trusts around the country (MOH, 2003a).

1.2.1 How Green Prescription Works

The GRx programme is a physical activity intervention strategy that aims to increase the activity levels of sedentary adults. GRx targets individuals who:

- (a) have a stable medical condition and would benefit from increased physical activity;
- (b) are physically inactive and
- (c) are contemplating changes to their physical activity levels.

A referral to GRx can be issued by the patient's GP or by a practice nurses as part of a patient's health management plan. Once the referral is received by the GRx patient support team, contact is made either by phone or mail to ascertain the most suitable option for intervention (SPARC, 2005a). Figure 1.1 illustrates the referral process for GRx and the nature of the support provided for increasing physical activity. Traditionally, GRx support is consisted of three telephone consultations focused upon providing motivational support, initiating goal setting, and identifying suitable activity options. Face-to-face consultations are also available in some regions of the country. Weekly community-based group sessions are a more recent phenomenon, and consist of a physical activity session in combination with a health education seminar. Furthermore, these sessions focus upon individual behaviour change counselling and goal setting. Routinely collected data from the Canterbury region indicates that those patients attending the community group sessions made significantly more progress toward their goals (86%) and reported positive changes (81%) compared with those receiving phone support (60% and 57% respectively) (Wensley, 2009). Although the sample size of this group data is small, these are encouraging findings supporting continuation of group-based delivery.

Figure 1.1: The Green Prescription Programme: How it Works



GRx support is provided for a period of three to twelve months, or until participants are confident that they can remain active independent of the programmes support. Although the programme is primarily concerned with increasing the level of physical activity, behaviours relating to bad nutrition and smoking are frequently addressed, depending on the individual in question.

Recently, many Regional Sports’ Trusts integrated a ‘graduation’ system which serves to provide a positive end to involvement with the programme: it recognizes participants’ achievements and provides an on-going support network. Participants are eligible to graduate once they have made progress toward fulfilling their goals, and are confident of maintaining their increased level of physical activity. Graduates then have the option of 1) exiting the programme, 2) joining a self-organised graduate group, and/or 3) giving back to the programme (such as by becoming a mentor for newly referred patients). Currently, a graduates group is not offered in the Christchurch region and few opportunities for giving back to the programme are available.

Similar to international exercise referral interventions, GRx has a positive but moderate effect² upon physical activity levels and clinical outcomes. It is possible to improve the effectiveness of initiatives like GRx by enhancing the cognitive-behavioural techniques used to facilitate behaviour changes in regard to health. Individually tailoring interventions, for example, by emphasising those behaviours and outcomes significant to the patient, may be a way of improving the number of instances in which patients initiate regular physical activity. Goal setting is one of the most commonly used strategies for facilitating behaviour change, and can be tailored to a patient's preferences, capabilities and desired outcomes.

1.3 Research Purpose

The aim of this qualitative longitudinal thesis was to explore the concept of success in relation to physical activity and health³ from the perspective of patients enrolled in the GRx programme. Data from two sets of semi-structured interviews, as well as data collected routinely on the GRx programme via participant enrolment and review forms was used to examine the qualitative aspects of physical activity uptake. This was completed over a 5-month period. The data was analysed using thematic analysis and interpreted in the context of current theories of behaviour change, with a specific focus on goal achievement. The main purpose of the research was to inform the current practice of strategies used to promote physical activity; firstly, by gaining insight into the theoretical basis of behaviour change, and secondly, by understanding the dynamic nature of cognitions that occur during a period of intended behaviour change. The following research questions guided this study:

How do inactive adults perceive success when attempting to modify physical activity behaviour for their health during their involvement in the GRx programme?

² The moderate effectiveness of exercise of referral interventions is discussed further in the Chapter 2.

³ Health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1948).

Does the understanding of success change during their involvement with the GRx programme? If so, how and why does this change occur?

What are the implications of this understanding of success for ways employed to promote health behaviours in the primary care setting and in intervention programmes such as GRx?

1.4 Physical Activity Promotion as a Public Health Strategy

The aims and strategies of the GRx programme are informed by the international recognition of physical activity promotion as an important public health strategy.

1.4.1 Physical Activity

Physical activity is broadly described as any form of bodily movement produced by skeletal muscles that results in energy expenditure (CDC, 1995). Exercise⁴ is distinguished as a subgroup of physical activity that takes the form of planned, structured and repetitive movement of the body (CDC, 1995). However the terms physical activity and exercise are used interchangeably in the literature and will be used synonymously throughout this thesis.

1.4.2 Participation in Physical Activity

In developed countries, participation in physical activity at a level that will benefit health is low (Nguyen et al., 2002; WHO, 2002; WHO, 2004). National research by SPARC has shown that less than two thirds of New Zealanders are participating in the recommended level of activity (MOH, 1999, 2003a; SPARC, 2002). The future of physical activity engagement does not seem promising, with projections estimating that the prevalence of inactivity in New Zealand to be around 4% by the year 2021 (Tobias et al., 2001). Given the tendency of participants to overestimate activity levels for the purposes of research, (Tsintsifa et al., 2006),

⁴ *Exercise* may be classified as either anaerobic or aerobic, depending on how energy expenditure occurs. Anaerobic exercise requires delayed oxygen consumption for energy expenditure, as the intensity and duration are of high intensity and last only a few seconds to a minute or two, e.g. weight (resistance) training and squash. Aerobic exercise requires immediate and sustained oxygen consumption for energy production during exercise that is less intense but of longer duration, e.g. walking, jogging and swimming (Ballor et al., 1996; Winnick et al., 2008).

it is possible that a sedentary lifestyle may be more widespread than SPARC’s findings suggest.

Figure 1.2: Dimensions of physical activity.
(SPARC, 2005. p 6)

PHYSICAL ACTIVITY	
CONTEXT	The descriptive category of physical activity
TYPE	The kind (mode) of physical activity – for example, aerobic activity or resistance activity
FREQUENCY	How often a person is physically active i.e. daily
INTENSITY	The level of exertion – light, moderate, vigorous
DURATION	How long the activity lasts e.g. 30 minutes

1.4.3 Physical Activity and Public Health

Numerous epidemiologic and experimental studies highlight the need to participate in regular physical activity for good health. Regular exercise leads to improvements in proxy measures of health status⁵ such as blood lipid profile, resting blood pressure, body composition, glucose tolerance/insulin sensitivity, bone density, as well as immune and psychological function (CDC, 1995). There is good evidence to suggest that leading an active lifestyle can not only reduce the risk but also modify the effects of a number of non-communicable conditions like obesity, cardiovascular disease, diabetes, some forms of cancer (Bauman, 1997; Berlin et al., 1990; CDC, 1996; Elley et al., 2004; Hillsdon et al., 1996; Iliffe et al., 1994; MOH, 2003a; MOH, 2003b). Some common mental illnesses, such as depression and

⁵ *Health status* refers to an individual's relative level of wellness and illness, taking into account the presence of physiological dysfunction, symptoms and functional impairment (Ware, 1995).

anxiety (Babyak et al., 2000; Berk, 2007; Estabrooks et al., 2003a; Lawlor et al., 2001b; McAuley et al., 2007; Palmer, 2005; Reynolds, 2001; Stathopoulou et al., 2006; Taylor et al., 2004), fall-related injuries, (Kahn et al., 2002; Taylor et al., 2004) and osteoporosis can also benefit from regular exercise. (MOH, 2000b; MOH, 2003a). Conversely, inactivity is associated with an increase in all-cause mortality rates (CDC, 1995). The World Health Organization estimates that participation in regular physical activity, healthy nutrition and abstinence from tobacco could prevent at least 80% of premature deaths from cardiovascular conditions (WHO, 2008). New Zealand estimates suggest a 10% increase in activity levels could prevent at least 2,600 deaths annually (Tobias et al., 2001). The financial burden of inactivity is estimated to constitute up to 25% of all health care costs (Katzmarzyk, 2000) in addition to social costs that are difficult to quantify (Hagberg et al., 2006).

The leading causes of premature death, both globally and within New Zealand, have been identified as those that can be positively modified by physical activity (MOH, 1999, 2000b, 2003c; WHO, 2002; WHO, 2008). Considering the prevalence of inactivity in developed nations, promoting regular physical activity has become a priority that is reflected in the New Zealand Health Strategy (2000). Of the thirteen priority health objectives necessary to improve the overall health of New Zealanders (MOH, 2000a; MOH, 2000b), one of the targets was to increase the level of physical activity, which addresses five of the other objectives (MOH, 2003a):

Reducing obesity

Reducing the incidence and impact of cardiovascular disease

Reducing the incidence and impact of diabetes

Reducing the incidence and impact of cancer

Improving the health status of people with severe mental illness

Physical activity does more than simply add quantity to the years of life: it can also add quality (Sullivan et al., 2003). From a health promotion perspective, physical activity can benefit the physical, mental, social and spiritual dimensions of health, and thus improve quality of life (Brehm et al., 2005; Estabrooks et al., 2003a; Lachenmayr et al., 2004; Lamarre et al., 2006; Nguyen et al., 2002; Rejeski et al., 2001). Therefore, promotion of physical activity goes beyond prevention and treatment of illness to encompass promotion of protective factors for well-being and health-related quality of life (HRQOL)⁶ (referred to as quality of life for the purposes of this thesis) as well as positioning health behaviour within the context of an individual's life (Brehm et al., 2005; Lamarre et al., 2006). Although positive aspects of health can be promoted concurrently, many interventions focus on risk factor reduction and disease management rather than the attainment and maintenance of good health (Brehm et al., 2005).

1.4.4 Recommendations for Physical Activity

Current guidelines from SPARC stipulate that a minimum of 30 minutes of moderate-intensity activity on most, if not all days of the week is necessary to benefit health in adults (SPARC, 2002, 2005b). It is a recommendation endorsed by the United States of America (CDC, 1995, 1996), the United Kingdom (DOH, 2004) and the World Health Organization (WHO, 2004). Historically, the recommendation arose from the United States Surgeon General's report (CDC, 1996) following the findings of a major review of the scientific evidence for the health implications of physical activity conducted by the United States Centers for Disease Control and Prevention and the American College of Sports Medicine (CDC, 1995). Prior to this, the dose-response relationships between exercise and physical fitness formed the basis of guidelines for vigorous aerobic activity as part of a formal exercise programme, for example, 20-60 minutes of moderate- to high-intensity aerobic exercise on at

⁶ HRQL describes an individual's satisfaction or happiness with domains of life insofar as they affect or are affected by health. HRQL assesses the impact of disease on physical, social, psychological/emotional and cognitive functioning by measures such as symptoms, health perceptions, and overall quality of life (Ware, 1995; Wilson et al., 1995).

least three days of the week (CDC, 1995). Physiological effects of physical activity capable of improving health are most likely to result from modification of parameters such as blood glucose tolerance, lipid profiles, blood pressure (Riddoch et al., 1998) and adiposity; epidemiological evidence suggests that it is not the frequency, duration or intensity of exercise sessions undertaken per week that produce these benefits, but rather the total volume of weekly exercise (Blair et al., 1996). The expert panel's review of international physiological, epidemiologic and clinical evidence concluded that the health benefits⁷ conferred by earlier recommendations were possible with an accumulation of moderate intensity physical activity. Moreover, moderate intensity activity is generally considered to be more achievable and sustainable for individuals than vigorous activity (Riddoch et al., 1998).

While the recommendation of 30 minutes of moderate-intensity physical activity on most days of the week pertains to the whole population, certain sub-groups for who exercise is likely to be most beneficial require targeted approaches to help them reach this goal. These include groups participating in low levels of physical activity and people at risk of, or experiencing, a health condition for which inactivity is a modifiable risk factor (Kerse et al., 2005; Lee et al., 2007; MOH, 2003a, 2003b; Shephard, 2001); both cohorts qualify for referral to the GRx programme.

Older adults⁸ represent another sub-group that could benefit by increasing their activity level, as both sedentariness and the risk of chronic disease increases with age (SPARC, 2002; Taylor et al., 2004; WHO, 2008). Older adults' participation is relevant to the present study as this age group makes up a significant proportion of patients referred to the GRx programme

⁷ *Health benefits* are defined here as *physiological benefits* and *observable benefits*. *Physiological benefits* refer to changes in clinical measures that cannot be perceived by the patient, such as blood pressure or blood glucose levels. *Observable benefits* include factors that can be perceived by the patient. These can include exercise-mediated improvements in strength, balance, flexibility and improved joint function that can reduce pain, improve functional ability and help prevent injuries. Other direct benefits include improved energy, sleep, cognitive function, mental wellbeing, self-esteem and physical appearance, such as weight loss.

⁸ *Older adult* is defined as a person over the age of 65 years.

(SPARCa, 2007). Promoting regular physical activity is important for medical reasons and may also improve the quality of life for older adults. For example, enhancement of subjective well-being or functional ability⁹ can prolong independent living (Kerse et al., 2005; Lachenmayr et al., 2004; Rejeski et al., 2001). Research shows that the risk reduction for all-cause mortality afforded by physical activity is an effect preserved even when uptake occurs in later life (CDC, 1995). SPARC's national survey reported that a higher proportion of older adults (*older than 55 years*) were more active¹⁰ than the average of all New Zealand adults (all age groups over 18 years combined) (SPARC, 2002), although closer examination reveals that less than half were active for SPARC's own recommendation of at least 30 minutes of moderate-intensity activity on five or more days of the week.

1.5 The Role of Primary Care in Physical Activity Promotion

Modifying the physical activity behaviours of sedentary adults has proven to be a challenging task despite the myriad of intervention approaches that have been undertaken (CDC, 1996; Hillsdon et al., 1996; MOH, 2003a; Schoenman et al., 1990; van Dulmen et al., 2007). Because many high risk individuals who are likely to benefit from increased activity present, and continue to be managed in primary health care, this has become an important setting for physical activity intervention (Estabrooks et al., 2003a; Glasgow et al., 2001; Livaudais et al., 2005; Meriwether et al., 2008; Stange et al., 2002; Swinburn et al., 1998a; Tulloch et al., 2006). As well as being key points of contact for lifestyle change in adults, primary care practitioners are generally perceived as credible sources of information by patients (Long et al., 1996; Swinburn et al., 1998a; Tulloch et al., 2006; Whitlock et al., 2002). Consequently, there is a general expectation that primary care has a central role in promoting health behaviours; in

⁹ *Functional ability* (also known as functional status) is an individual's ability to perform normal daily activities required to meet basic needs, fulfil usual roles, and maintain health and well-being (Wilson et al., 1995).

¹⁰ Definitions of *active* and *inactive* used in the SPARC survey: *Active*: those taking part in 2.5 or more hours of sport and active leisure in the 7 days before the survey. *Inactive*: those taking part in less than 2.5 hours of sport and active leisure in the 7 days before the survey (SPARC, 2002)

the United States for example, practitioners are expected to advise all patients to increase their physical activity to the recommended level (USDHHS, 2001). Around 22-48% of patients report that their practitioners have raised the subject of exercise with them (Glasgow et al., 2001; Pfeiffer et al., 2001), however, practitioners tend to discuss issues such as smoking or diet much more frequently than physical activity (Gould et al., 1995).

A desired widespread endorsement of exercise within primary care settings is ultimately limited by the time, resources, skills and attitudes of primary care practitioners. Research has shown that these factors include having a limited awareness of, or training in behaviour change strategies, and holding negative attitudes or stereotypes about patients and their ability to exercise (Gould et al., 1995; Meriwether et al., 2008). In addition, there is a lack of conclusive evidence indicating that physician counselling increases patients' physical activity level sufficiently to result in health benefits (Estabrooks et al., 2003a; Glasgow et al., 2001; Gould et al., 1995; Lorentzen et al., 2007; Meriwether et al., 2008; Shephard, 2001). Although primary health care continues to be advocated as a point for direct intervention, the difficulties outlined may indicate the need for complementary approaches, such as referral to supporting services like GRx.

1.5.1 Prescribing and Referring for Physical Activity

Verbal advice alone has been shown to have little impact on patients' behaviour, while written prescriptions plus verbal advice have shown slightly better results (Elley et al., 2003; Kerse et al., 2005; Lawlor et al., 2001a; Morgan, 2004; Riddoch et al., 1998; Smith et al., 2000). Evidence of effectiveness has been demonstrated when verbal and/or written advice is given in conjunction with individualised action planning, distribution of educational materials, referral to a support service and follow-up (Elley et al., 2003; Estabrooks et al., 2003a; Estabrooks et al., 2003c; Kahn et al., 2002; MOH, 2003a; Smith et al., 2000; Sorensen et al., 2006; Swinburn et al., 1998a).

The time and resources required to support physical activity uptake are typically beyond the capacity of most primary health care practices (Estabrooks et al., 2003a; Meriwether et al., 2008; Shephard, 2001); consequently, it has become common and acceptable to refer patients to intervention programmes that can provide the intensive support required (Riddoch et al., 1998). Referring patients to supporting programmes has the added advantage of forming an alliance between the primary health care provider and the patient's wider community (Tulloch et al., 2006). Various studies have demonstrated physical activity interventions are practical and cost-effective ways of improving public health (MOH, 2003a; Tobias et al., 2001), with even greater cost-benefit ratios reported in high risk groups (Glasgow et al., 2001; Hagberg et al., 2006; Morgan, 2004) and individually tailored programmes (Kahn et al., 2002; Riddoch et al., 1998). Most studies demonstrate increases in physical activity levels and health, but the effects sizes are modest, and long-term adherence is an on-going challenge (Bredahl et al., 2008; Costanzo et al., 2006; Kahn et al., 2002; Lawlor et al., 2001a; Martin et al., 1999; Morgan, 2004; Oberg, 2007; Pfeiffer et al., 2001; Reid et al., 1979; Riddoch et al., 1998; Sorensen et al., 2006).

In the context of primary care referral programmes like GRx, the role of the health practitioner is to assess the patient's current level of physical activity, stage of readiness, and in some cases, to prescribe the amount and type of exercise to be undertaken. Although the majority of support work is undertaken by the intervention staff, referring practitioners continue to play a central role in providing on-going support for their patients' physical activity participation (Whitlock et al., 2002). Interventions typically involve phone-based support, face to face consultations and/or community group sessions (Glasgow et al., 2001; Kahn et al., 2002; Riddoch et al., 1998; Shephard, 2001; Wormald et al., 2006); many rely on behaviour change counselling and/or motivational interviewing, and some are underpinned by a theoretical basis (Kahn et al., 2002; Riddoch et al., 1998). These techniques help to profile

exercise habits and preferences; to identify and address barriers ¹¹to physical activity participation; to set goals; advise on affordable and appropriate activities; and provide regular follow-up (Estabrooks et al., 2003a; MOH, 2003a; Olson, 1992; Stange et al., 2002; Wormald et al., 2006). Effective programmes are generally considered to be ones that are tailored to meet the needs of the individual (Bowling et al., 2008; Eckstrom et al., 1999; Glasgow et al., 2001; Heisler et al., 2003b; Krupat et al., 2000; Meriwether et al., 2008; Resnicow, 2002; Rollnick et al., 2005; Rollnick et al., 1995; Whitlock et al., 2002) and are appropriate and acceptable to the local community (Eckstrom et al., 1999; Maryniuk, 2007; Meriwether et al., 2008; Rejeski et al., 2001; Rollnick et al., 2005; Staniszewska, 1999; Tulloch et al., 2006). As such, tailored interventions address the patients' individual circumstances, preferences and desired outcomes. A patient-centred approach positions patients as the lead decision makers in developing goals for behaviour change (Estabrooks et al., 2003a; Meriwether et al., 2008; Rollnick et al., 2005), but also favours a collaborative and supportive approach from the interventionist (Eckstrom et al., 1999; Meriwether et al., 2008; Rollnick et al., 2005; Whitlock et al., 2002).

Approaches for improving physical activity levels in primary care and in referral programmes can involve information and education, verbal and/or written advice and various cognitive-behavioural strategies (Docherty, 2006; Smitherman et al., 2007). Although these techniques are time and resource intensive, they are collaborative approaches that can be tailored to patients' individual needs (Riddoch et al., 1998; Docherty, 2006). A range of cognitive-behavioural strategies employed in physical activity interventions are summarised in Table 1.1 on the next page.

¹¹ Barriers are factors that limit physical activity participation. Barriers may be external to an individual, such as weather, cost or access to facilities, or they may relate to the individual, such as physical (e.g. pain or health conditions), psychological (e.g. motivation), or social factors (e.g. lack of perceived support or company) (Sullivan et al., 2003).

Table 1.1: Advantages and Disadvantages of Common Intervention Strategies.
Adapted from Smitherman et al., 2007.

Intervention Strategy	Advantages	Disadvantages	Example
Information/education	Minimal cost and time	Unsuitable for illiterate patients or those with language barriers; usefulness may be limited without specific advice	Handouts or videos on the benefits of exercise, motivational information
Advice	Minimal cost and time	Usefulness may be limited without education about the importance of activity	Written exercise prescriptions; verbal advice
Self-monitoring	Inexpensive for patients and providers; actively engages the patient	May be ineffective with forgetful or poorly compliant patients	Pedometers; activity logs; charting progress through web-based programmes
Behavioural counselling	Tailored to patient's needs, motivation and barriers; encourages collaboration between patient and provider	Requires significant time and cost; adequately trained staff; frequency and duration vary depending on patient needs	Face-to-face counselling/motivational interviewing sessions with health educator, intervention staff etc

The community group sessions offered by the Christchurch GRx programme constitute the focus of this research. The sessions offer supervised exercise in a community facility, provide face-to-face support from intervention staff qualified in exercise prescription, and provide education and motivational support through seminars and providing printed resources. They also employ all of the other strategies listed in Table 1.1. Patient consultations are guided by structured registration forms (see appendix A) that collect data on current activity level, preferences, barriers and which also measure the patient’s confidence towards a

potential increase in activity level. These forms also enquire about the level of importance that patients attribute to increasing their level of physical activity. Being a group intervention, it also differs from one-on-one interventions and phone-based support, as it is inherently social in nature, provides peer support and is subject to group dynamics (Estabrooks et al., 2003a; Kahn et al., 2002; Nguyen et al., 2002).

1.6 Summary

This chapter has summarised background information concerning physical activity and its relationship with health. The Green Prescription programme has been explained, alongside descriptions of the various interventions and strategies which operate through the primary health care setting. The next chapter critically examines what success may mean in regards to physical activity from the perspectives of professional entities and patients.

Chapter Two: A Review of Selected Literature: Perspectives on Success in Terms of Physical Activity and Health

2.1 Introduction

To advocate patient-centered outcomes as the primary measure of medical interventions is to accept “perspective” as unavoidable in clinical medical science. (Sullivan, 2003 p. 1599)

This chapter explores two broad perspectives of success¹² in relation to physical activity that is beneficial to one’s health: the professional perspective and the patient perspective. Professional or public health perspectives encompass governmental organisations, academics and health promoters working at community and individual levels. Understanding the perspective of patients who have been prescribed physical activity is less straightforward given the paucity of research upon this topic. The capacity of collaborative goal setting to reflect a mutual understanding of success between patients and professionals is critically examined. This chapter investigates the qualitative and quantitative literature upon patient goals, experiences and benefits regarding physical activity and health. Finally, this chapter considers research in sport and exercise settings that have addressed the concept of success through goal orientation theory.

¹² For the purpose of the literature review, success is defined as the outcomes which are desired or achieved by each group.

2.2 Understanding Success from the Professional Perspective

2.2.1 The State Perspective on Success

As discussed in chapter one, chronic diseases (for which physical activity is a modifiable risk factor) are the leading causes of morbidity and mortality in New Zealand. Yet many adults are insufficiently active for health benefits to be realized (MOH, 2000a; MOH, 2003a). Efforts to improve these statistics are routinely undertaken by the Government organisations, SPARC and the Ministry of Health. SPARC's overarching objectives are to increase physical activity participation and strengthen the physical recreation sector in New Zealand (SPARC, 2005). Specifically, their aim is to get as many New Zealand adults as possible engaging in at least 30 minutes of moderate-intensity activity on most, if not all days of the week (SPARC, 2002, 2005b). Therefore, success from a public health point of view entails a higher prevalence of physical activity; this would in turn lead to a lower incidence, and reduced impact, of chronic disease that could potentially reduce health care costs.

2.2.2 The Academic Perspective on Success

From a state perspective, there is still significant debate regarding the capability of interventions like GRx to achieve success. Outcome measures and conclusions drawn from clinical trials provide a general review of how success is understood in the academic literature. Given the scope of published research upon exercise interventions and the similarity of their findings, the following discussion is limited to 1) experimental trials included in the most recent systematic review within the primary care setting, and 2) to one study specifically conducted upon the GRx in the New Zealand setting.

Morgan's (2004) systematic review examined nine experimental trials of primary care exercise referral interventions. Inclusion was limited to primary care interventions providing access to activities and/or facilities and assessed physical activity as an outcome measure. Both experimental and quasi-experimental designs with a control group were included. Four of the trials selected for review were conducted in the United Kingdom, four in the United States of America and one in New Zealand. Overall, Morgan (2004) concluded that primary care interventions moderately increase the activity level of participants compared to verbal and/or written advice alone. The five studies with a follow-up period of at least one year determined that increases due to the intervention were not sustained over time. However, adherence to the intervention and increases in physical activity were higher in participants who were slightly active at baseline, older and overweight but not obese. Heterogeneity existed in the outcome measures of the study and thus prevented a pooled statistical analysis from being undertaken.

There are key limitations within the individual studies detailed in Morgan's review, and these stem from flaws in the recruitment, randomisation and/or blinding processes. This review imposed more stringent inclusion criteria than other systematic reviews of exercise interventions (Foster et al., 2005; Hillsdon et al., 1996; Hillsdon et al., 1995; Riddoch et al., 1998). However, assessment of the selected trials still determined that a moderate to high potential for bias existed in most of the studies. In addition to the inadequate implementation of several interventions, all of the trials had some potential for cross-over contamination, self-selection bias and referral bias. Moreover, moderate to low response rates were compounded by high loss upon follow-up. The reliance upon self-reported activity to determine the effect may over- or underestimate the true activity level, due to factors such as self-presentation bias, poor recall and variability in activity habits (Bauman et al., 2006b; Blair et al., 2006b; Gidlow et al., 2008; Swinburn et al., 1998a; Swinburn et al., 1998b). These factors are likely to

affect both the intervention and control groups. The study samples differ in many respects from the target population of inactive patients who do not typically participate in such studies (King et al., 1993). Individuals who do agree to participate tend to be more motivated or have been considering making changes to their lifestyle (Estabrooks et al., 2003b; Gidlow et al., 2008). Representative samples are especially crucial as certain segments of the population are known to respond better than others, as was demonstrated in Morgan's (2004) findings. While the participants may not be entirely representative of the target group, these are difficult issues to avoid in practice. It is also important to note that the intervention characteristics and study sample share more similarities to the GRx intervention than do other trials. Moreover, the overall findings are similar to those of the GRx trials conducted in New Zealand and thus the results can be generalised with reasonable confidence (Elley et al., 2003; Swinburn et al., 1998b).

Morgan's (2004) conclusion that referral programmes are capable of achieving a small but significant increase in activity level is supported by other reviews of both primary care interventions (Riddoch et al., 1998) and other intervention approaches (Foster et al., 2005; Hillsdon et al., 1996; Hillsdon et al., 1995; Kahn et al., 2002). Based on these findings, recommendations for widespread implementation of referral programmes suggest that success is equated to clinical performance¹³. Although clinical trials have demonstrated the ability to modify behaviour under certain conditions (efficacy), the level of success for all those participating in the programme (effectiveness) cannot be definitively established through experimental trials.

¹³ *Clinical performance* describes the degree of accomplishment of desired health objectives from the perspective of health professionals. Measures of clinical performance include process measures; outcomes measures (health state resulting from treatment); access to health care services; and patient experience of, and participation in health care (NQMC, 2009).

Based upon evaluation data from non-experimental interventions that exist in the community, Riddoch et al. (1998) found that changes in physical activity and related measures were much larger than those observed in clinical trials. However, these findings should be interpreted with caution, given the non-experimental design of the intervention, absence of a comparison group, and the likelihood that referral and self-selection bias will be greater than in clinical trials. The difference between the clinical data and evaluation data could also be attributed to placebo effect and the risk of selective reporting of positive results (Riddoch et al., 1998) and generalizations from small and/or incomplete data sets cannot be ruled out (Gidlow et al., 2008). However, such a large discrepancy suggests the impact of interventions could be much greater than experimental data reports (Riddoch et al., 1998).

However, rather than debate whether exercise interventions are efficacious or not, the purpose of this section is to establish how the academic literature defines success in terms of physical activity that leads to health benefits. The literature upon clinical trials is predisposed towards defining success in terms of objective measures, such as improvement in physical activity level, measures of disease risk and control¹⁴, and health outcomes¹⁵. This emphasis on health-related outcomes is motivated by the potential for reducing the incidence and impact of chronic disease, although the modest effectiveness observed in clinical trials challenges the impact of such interventions upon public health. Other research has expanded the criteria for success to include impacts beyond clinical outcomes - notably toward patient-centred outcomes, such as quality of life measures. Quality of life measurement has been described as a 'representation of how good life is for a person', and may thus be able to

¹⁴ *Measures of disease risk and control* (also termed clinical measures for the purposes of this thesis) can include HbA1c, blood glucose levels, lipid profile, resting blood pressure, body weight, body mass index, shortness of breath and self-reported severity of symptoms.

¹⁵ *Health outcome measures* can include functional status, mortality, disability, pain, restricted activity days, quality of life, self-reported health status and disease complications such as organ damage.

provide a patient-centred view of the wider impacts of physical activity interventions (Manns et al., 2001 p. 795). While experts have assumed that improvements in reducing and controlling disease risk will improve quality of life, patients have had only moderate input into how their own quality of life is measured by health professionals (Manns et al., 2001; Sullivan, 2003).

2.2.3 Expanding the Clinical Perspective to Patient-centred Outcomes

Objective achievement of the recommended level of activity related clinical measures¹⁶ are undoubtedly important for health gains, but it may also be unrealistic to expect large increases in large numbers of patients (Riddoch et al., 1998). Less importance is generally given to alternative outcome measures such as quality of life; progression toward the guideline activity level; and theoretical constructs such as stage of change (described in Chapter 3) (Bauman et al., 2006a; Gidlow et al., 2008; Riddoch et al., 1998; Smitherman et al., 2007). Assessing these factors may provide a better description of the range of impacts that interventions are capable of modifying.

Measures of quality of life were examined alongside physical activity participation and clinical indicators in the research cited by SPARC as the evidence base for GRx (Elley et al., 2003). The cluster RCT was conducted in urban and rural primary care practices. Patients were randomised to receive either verbal advice (n=427) to increase their activity, or given verbal advice plus a written GRx (n=451). Participating GPs were trained in motivational interviewing and described the intervention to patients as a means of increasing their activity level. Following the consultation, patients in the intervention group received their doctor's recommendations in the form of a written GRx, as well as resources on motivation and local physical activity options, as well as three phone support calls from GRx staff.

¹⁶ Clinical measures describe the measures of health and disease that are determined through clinical testing, such as blood glucose level, blood pressure and blood cholesterol level.

Participants receiving a GRx increased their physical activity levels significantly more than those receiving verbal advice alone; 14.6% of the intervention group achieved 150 minutes of moderate-vigorous intensity activity per week, whereas only 4.9% of the control group attained this level. Similar to the studies in Morgan's (2004) review, the potential for self-selection and referral bias cannot be excluded in this trial, although the baseline characteristics of the intervention and control groups were reasonably similar. Although there was insufficient power to detect a statistically significant effect for some measures, positive trends were observed in relation to some clinical measures, such as blood pressure. During the twelve-month study period, a range of positive changes were observed in both groups, but less of an improvement was observed in the control group. In the intervention group, significant improvements from baseline levels were reported in the quality of life measures such as general health, vitality, bodily pain and total energy expenditure. It was estimated that the net difference in energy expenditure between the intervention and control group was 247 kJ per week, and that around 10% of the GRx group had increased their activity levels high enough to reduce their risk of mortality by 20-30%.

To gain a greater depth of knowledge of the wider impacts of referral programmes, Riddoch et al. (1998) conducted a qualitative analysis upon three non-experimental primary care interventions; he also analysed their systematic review of clinical trials. Purposive sampling of the programmes ensured coverage of a diverse range of characteristics, although each of the interventions included face to face and/or group contact (in the form of either a fitness centre setting or walking groups). Although the study aimed to assess the impacts that interventions have upon patients, primary care workers and intervention staff (who worked with or referred patients) were the ones recruited. Only three programmes were analysed but a wide range of data sources were utilised, including semi-structured interviews, informal discussions, job shadowing and document analysis. Participants were asked to express their opinions

as to what made the intervention successful or unsuccessful, and how it had affected them. No specific qualitative paradigm or methodology was mentioned, but the data analysis involved searching for patterns and consistencies within pre-determined response categories. While the response categories and consistent application of the interview schedule ensured uniform coverage across each intervention and each research participant, the collection of valuable material could also have been curtailed by these restrictions.

It is interesting to note that “data from the three case studies tell a completely different story to the data from the systematic review” (Riddoch et al., 1998 p. 55). There was a consensus amongst the interviewees that a wide range of benefits existed for patients, not all of which were due to physical activity itself. The overarching objectives of each intervention were to improve activity levels and related physiologic measures, but the qualitative analysis did not identify these as the factors with the greatest impact upon patients. Rather, psychological and social benefits were strongly emphasised: it was believed the intervention had improved the patients’ self-confidence, self-esteem, levels of anxiety and depression, and generally enhanced their outlook upon life. The support and encouragement of other patients was considered important, as was the sense of identity they gained by participating in the programme. Primary care practitioners said their initial scepticism of the intervention was dispelled after the numerous benefits observed in, and reported by their patients. Having a non-pharmacologic option to offer patients was valued for both treatment and preventative reasons (Riddoch et al., 1998).

Nested in the first RCT of GRx described in the previous chapter, Swinburn et al. (1997) investigated the attitudes of those GPs participating in the trial in relation to GRx. During structured focus groups, the GPs reported that they generally felt comfortable offering advice and discussing physical activity with their patients.

Nevertheless, they expressed their preference for combining written and verbal advice because it provided a way to formalize physical activity goals. Overall, GRx and patient benefits were perceived in a positive light, but little discussion about the perceived impacts upon patients was reported. Attendance at the three focus groups may have been higher for practitioners who viewed the programme more optimistically, although the authors noted that both positive and negative opinions were voiced. Further exploration of the understanding of success from the patients' perspectives is presented in the next section of this review.

2.3 Understanding Success from the Patient Perspective

2.3.1 Collaborative Goal Setting: A Mutual Understanding?

Patient participation in the goal setting process is considered to be an essential aspect of promoting physical activity uptake (Swinburn et al., 1997). Research has also demonstrated that compliance with treatment recommendations can be improved when patients participate in the planning of their health management plans (Roast, 1989). The studies discussed in this review so far have attempted to gauge the impact of interventions upon patients, but only from the perspective of professionals. Within the paradigm of patient centred care, participatory approaches such as collaborative goal setting should, in theory, demonstrate a mutually agreed understanding of success between the patient and practitioner.

A collaborative goal setting intervention was conducted in a recent cluster RCT aimed at improving function in activities of daily living, enhancing quality of life and reducing falls in older adults living in residential care (Kerse et al., 2008). Participants randomly selected for the intervention group (n=330) were offered a goal setting intervention and personalised physical activity plan based around activities of daily living by a gerontology nurse; the control group (n=352) were visited by a social science researcher to suffice for the attention the other group received from the

gerontology nurse. Overall, the intervention was found to have no impact, and caused harm in some participants. However, cognitive function was found to moderate the outcomes in the intervention group. After the intervention, participants with impaired cognition had more pronounced depressive symptoms and greater deterioration in overall function compared with the control group. Those with normal cognitive function showed less deterioration in overall physical function and demonstrated maintenance of lower limb function.

Weaknesses of the study include the fact that only 70% of participants completed the trial; the authors also indicate that the rate of compliance is likely to have been low. It is possible that the recommended exercises were insufficient to effect significant changes in physical strength and mobility. The study group of older adults in residential care also differs from the target group of GRx patients, who are generally community dwelling and without significant physical or cognitive impairments (Kerse et al., 2008). Meaningful and collaborative goals were a central topic of investigation in this study, yet no examples of the agreed goals were reported. The following description was reported to guide the collaborative goal setting process:

...a mutually agreed goal that had to meet two criteria: it had to be relevant and meaningful to the resident, and it had to promote progressive increases in physical activity.' (Kerse et al., 2008 p. 3)

The study objectives included the implementation of individualised activity plans; these plans were structured around activities such as sitting down and rising from a chair, and other repetitions of activities of daily living. A reduction in the number of falls and improved function or quality of life may not have reflected the personal goals of the participants. Although such improvements can be meaningful, whether the goals were meaningful to the participants is unknown. In light of the role intrinsic

motivation plays in physical activity participation, the enjoyment of such an activity plan is questionable, while social benefits of group-based programmes like GRx were not a feature of this intervention. These deficits may explain why the intervention demonstrated minimal effect. However, the desired outcomes may not have been achieved even if the research methods were modified.

2.3.2 Patient Participation in Discussions about Physical Activity

The value of Kerse et al.'s (2008) study in understanding success through collaborative goal setting is limited by the absence of information on the types of goals set; how meaningful they were to participants; and to what extent the process was truly participatory when goals were structured around professionally defined objectives. The underlying assumption that collaborative goals embody a mutual understanding of success between the patient and practitioner is worthy of further mention. The 5A framework (Ask, Advise, Agree, Assist, Arrange) provides a systematic way of counselling primary care patients about lifestyle change. When applying this framework to physical activity, a practitioner would 'ask' about the patient's current physical activity, and whether he or she considered it to be necessary, 'advise' them to increase it, and provide information about expected benefits and specific recommendations for duration and frequency of activity. Together, the patient and practitioner would 'agree' upon physical activity goals based upon the patient's preferences and self-efficacy¹⁷. Next, the practitioner would 'assist' the patient by

¹⁷*Self-efficacy* can be described as the confidence an individual has to successfully initiate and maintain regular physical activity. The influence of past experience is taken into account, assuming that individuals reflect on their successes and failures and use this information to guide future behaviour (Bandura, 1997; Ellickson et al., 1990). Self-efficacy has been demonstrated as one of the strongest predictors of behaviour change and maintenance (Allison et al., 2004; Bandura, 1997; Lorig, 2006; Povey et al., 2000). Allison et al.'s (2004) intervention to enhance self-efficacy for older adults developed a framework using four ways of promoting self-efficacy: performance accomplishments, verbal persuasion, physiological arousal, and vicarious experience.

helping them identify and develop specific strategies to overcome barriers, and also introduce ways of facilitating increased behaviour change. Finally, the practitioner would 'arrange' support, such as referrals, resource materials or follow-up.

An observational study in America investigated the implementation of this framework for physical activity during routine primary care consultations (Carroll et al., 2008). Although the primary care systems differ markedly between New Zealand and the United States, the 5A framework can be considered similar to other participatory approaches used in New Zealand for lifestyle counselling (Docherty, 2006; Hayward et al., 2006). The twelve practitioners taking part in the study were informed that the research purpose was to observe communication about health. Patients, on the other hand, were informed that the study was to observe communication about health behaviours. Consultations with the 51 (73%) consenting patients were audiotaped, and a survey was completed at the end of their appointment. From the 19 discussions about physical activity that occurred, each statement made by practitioners was categorised according to the 5A framework.

Conclusions drawn from the study indicate that collaborative discussions are infrequent, although the small data set may not have captured the full usage of the 5A framework that occurs within these practices. Findings also revealed that patients were 'asked' about physical activity 16 times, and 'advised' 10 times. Conversely, 'agree' and 'assist' statements were less frequent, occurring 4 and 5 times respectively. No 'arrange' statements were identified. Recommendations for duration, frequency or type of activity were provided in only five of the consultations; no examination of personal barriers or goals occurred, and the authors noted that most of the talking about physical activity was done by the practitioners.

The prevalence of 'agree', 'assist', 'arrange' interactions may in fact be more common than was observed. Time restrictions in primary care consultations are also likely to have limited comprehensive coverage of physical activity promotion. As a cross-sectional study, physical activity promotion occurring over successive consultations may have been missed. The authors attempted to allow for this factor by including survey questions about previous communications about exercise. However, only 32% of practitioners had discussed physical activity during consultations prior to the survey. This suggests that recall bias is a significant threat to the reliability of this data. Whilst observational methods enable patient-practitioner interactions to be studied in a natural setting, intervention effects (such as awareness of being involved in a study and the presence of audio-recording equipment) may have altered the interaction.

In spite of these limitations, the study illustrates how discussions about physical activity are not always collaborative: practitioners demonstrated an authoritarian style of asking and advising, whereas any verbal participation on the part of the patient, whether it be about goal setting or provision of assistance, occurred infrequently. Consequently, a mutual understanding of success between the patient and practitioner cannot be confidently understood through goal setting or action planning, even if it is described in the literature as collaborative.

2.3.3 Concordance for Treatment Goals and Strategies

Minimal patient participation and collaboration could be acceptable if patients and practitioners had a concordant understanding of success. On the contrary, a plethora of research studies indicate that significant discordance in goals, outcomes and strategies does exist (Bajramovic et al., 2004; Kwok et al., 2001). One group of researchers conducted a cross-sectional survey to examine the concordance of treatment goals and strategies between 127 randomly sampled patients with type 2

diabetes and their primary care practitioners (Heisler et al., 2003b). The survey, requiring them to rank their top three goals and strategies, found there was poor agreement in diabetes management priorities: overlap on all three treatment goals was found in only 5% of patient-practitioner pairs; 36% agreed on two goals; 40% agreed on one goal; and 19% had no common goals. Examination of treatment goals showed practitioners identified normalizing blood pressure and lowering cholesterol to be most important, whereas patients prioritised staying off insulin, getting off all medications and lessening physical discomfort. Patients with more concordant goals rated higher self-management of their condition than patients with fewer common goals (Heisler et al., 2003b). Another study co-conducted by the primary author demonstrated that self-management is correlated with objective measures of glycemic control (Heisler et al., 2003a).

One of the strengths of this study was comparing each patient with their own primary care practitioner, whereas other studies have compared pooled results of patients and practitioners in order to establish concordance in general terms (Bajramovic et al., 2004; Kwoh et al., 2001). The 56% of patients who returned the mail out survey were more likely to be older, male (81%), married and white (88%) compared with non-respondents. Requiring participants to select and rank treatment goals and strategies may have missed goals and strategies not included on the list, and thus may not have fully established the priorities that patients and practitioners have for diabetes management. Descriptive data generated by qualitative studies is largely free from the limitations imposed by pre-determined response categories of quantitative studies. Discordance in goals and strategies suggest that patients have different understandings of success from their primary care practitioner, and thus the literature review now turns to qualitative inquiries that advance the patient's perspective.

2.3.4 Health and Life Goals

The goals expressed by the patients were explored in a qualitative study by Morrow et al. (2008) examining how agreement between health and life goals influences self-management of type 2 diabetes. Participants were sourced from outpatient clinics and eligible to participate if they were over the age of 55, had a diagnosis of type 2 diabetes and hypertension and at least one other chronic co-morbid health condition. Data was collected from 24 patients (9 females and 15 males) using semi-structured interviews and analysed for themes pertaining to goals, type 2 diabetes and self-management practices.

Significantly, the study identified patient goals concerning longevity, spending time with family, improving or maintaining physical function, maintaining independence and improving diabetes management - findings that have been reported in other studies of diabetes patients. Most of the patients in Morrow et al.'s (2008) study described multiple goals in terms of functional activities rather than health or disease outcomes. Morrow et al.'s (2008) findings confirm those of an earlier study relating to patients with type 2 diabetes over the age of 65 years (Huang et al., 2005). Through the semi-structured interviews, Huang et al. (2005) found that 71% of the 28 participants reported health goals that focussed upon maintaining their independence and completing activities of daily living. In both studies, patients described their goals in functional terms, and as Huang et al. (2005) point out, disease management goals are important to patients, but it is those issues immediately at hand that are most pressing.

Potential limitations of Morrow et al.'s (2008), Huang et al.'s (2005), and other qualitative studies are discussed in this review. These limitations pertain to the multiple interpretations that are possible in qualitative research, as researcher bias can affect the study design, data collection, analysis and interpretation. Semi-structured interviews in Morrow et al.'s (2008) study were conducted by experienced qualitative

researchers, while interviewers in Huang et al.'s study (2005) presented themselves to participants as type 2 diabetes patients themselves to encourage disclosure; both studies were guided by an interview schedule to ensure coverage of all topic areas. The high numbers of older patients with multiple co-morbidities in both studies share similar characteristics to patients issued a GRx (SPARCa, 2007). Goals concerning longevity, functional status and independence identified in Morrow et al. (2008) and Huang et al.'s (2005) studies are comparable to discourses in the expanse of literature on ageing. These goals will be discussed in the next section of this review.

2.3.5 The Role of Physical Activity in Successful Ageing

Successful ageing describes older adults who have a low probability of disease and disability; a high cognitive and functional capacity; are actively engaged in life (Rowe et al., 1997) and have a sense of psychological well-being (Phelan et al., 2004). All of these factors are closely related to the benefits and motives reported by patients referred to GRx (Elley, 2007; Pringle, 2008), as well as participants in other studies of physical activity (Morrow et al., 2008; Riddoch et al., 1998; Scanlon-Mogel et al., 2004). Patient perspectives in chronic disease management and exercise intervention studies are also similar to the findings in Moore et al.'s (2006) phenomenological research into perceptions about meaning and purpose in life. The findings are limited to 11 participants (2 male; 9 female) aged 66-92 years of predominantly white ethnicity. These participants had stated that they had a specific purpose or meaning in life, and this allowed them to be eligible for the study. A participants' functional capacity to embrace life was described in terms of being physically able, a finding supported by other studies of older adults (Lowe, 2007; Scanlon-Mogel et al., 2004). Maintaining independence and quality of life into old age is also an important goal for patients with chronic diseases and in older adults (Diongi, 2006; Scanlon-Mogel et al., 2004).

Some authors have also suggested that 'preservation of function may be crucial to make a life continue to be worth living' (Sullivan, 2003 p. 1599).

2.3.5 Competitive Athletes

The understanding of success in physical activity has been addressed more directly in sports and exercise literature. However, athletes understand this concept of success differently than patient groups who have been prescribed exercise for their health. Maintaining functional ability and a sense of independence and control with advancing age (described in the successful ageing literature) may be driven by negative societal stereotypes that ageing involves dependency, debilitation and becoming a burden on family and society (Lowe, 2007; Scanlon-Mogel et al., 2004). Dionigi's (2006) Australian study of older competitive athletes (master athletes) expressed negative views about ageing, but the athletes also undertook activities that challenged age-appropriate stereotypes and enabled favourable comparisons with other older adults. A total of 28 older adults aged 60-89 involved in competitive sport were recruited through a combination of purposive, convenience and snowball sampling. Inductive analysis of the semi-structured interviews identified the master athletes' resistance to the ageing process and associated stereotypes in terms of physical activity. The master athletes described a sense of pride in those achievements that defied their age and which compared favourably with the capabilities of other older adults. In other cohorts of older adults, favourable comparisons of physical ability with others enable people to draw conclusions about themselves and are associated with better physical health (Lowe, 2007; Scanlon-Mogel et al., 2004).

A recent qualitative study investigating success in a competitive exercise setting was guided by the assumption that the definition of success varies according to a person's way of thinking about goals and goal achievement (goal orientations). The study

sought to define success in strength training by recruiting athletes attending an American university who competed in a range of different sports (Gilson et al., 2008). From the 133 participants who completed the 28-item Multiple Goal Orientation Questionnaire, 15 participants demonstrating a strong dominance toward one of five different orientations were purposively selected for qualitative interviews; the response rate was 100%. The athletes' perspectives were explored in semi-structured interviews that were analysed by two researchers who were blinded to the participants' goal orientation, and triangulated with a third researcher. The four themes related to the experience of success that occurred during or shortly after exercise. Accomplishing a task and improvement for its own sake was the first theme, while giving maximum effort was also seen as necessary to achieve success. Pleasing others pertained to the belief that peers and coaches must be pleased in order for these athletes to feel successful. The final theme describes athletes who felt successful in their strength training when it aided or demonstrated their recovery from an injury (Gilson et al., 2008).

Conclusions about the understandings of success for patients in the GRx programme who are typically older, inactive and with co-morbid health conditions cannot be accurately judged from the competitive contexts of Dionigi's (2006) master athletes, nor the young strength training athletes of Gilson et al.'s (2008) study. The literature review now considers what success may mean to GRx patients by turning to research with patients referred to the GRx programme in New Zealand.

2.3.5 Patients Referred to Green Prescription

A qualitative study undertaken by Pringle (2008) investigated the psychological effect of receiving a GRx. A sample of 42 GRx patients from Hamilton and Nelson were purposively recruited to reflect perspectives of active and inactive patients.

Participants' and the attitudes, beliefs and factors that influenced each group, as well as their experience of receiving a GRX, were explored in semi-structured interviews.

The inductive analysis revealed that the active group described receiving a GRx as a positive experience and held positive beliefs and attitudes toward physical activity. They reported a range of benefits including weight loss, less pain and improved mobility, energy levels and sleep. Other changes included psychological benefits such as feeling happier, more confident and having a greater sense of self-worth, intrinsic enjoyment of exercise and new-found social connections. In contrast, inactive patients tended to have negative reactions to receiving a GRx and generally reported negative attitudes and beliefs toward exercise. Most had not expected or experienced any benefits from being more physically active. Sedentariness at the time of the interview was attributed to factors including an absence of benefits and barriers to exercise. A sub-group of the inactive cohort reported having no desire to change because they were generally happy with their health and life, while others were unconcerned about the health risks inactivity posed.

Many of Pringle's (2008) findings are similar to patient perspectives reported in an earlier qualitative study of GRx recipients (Elley 2007) who were sourced from the RCT by Elley et al. (2003). The influences upon physical activity uptake by Elley (2007) were examined in fifteen purposively sampled participants from the GRx intervention arm of the GRx trial (Elley et al., 2003). Inductive analysis of the semi-structured telephone interviews revealed four central themes: the importance of personalised exercise advice; internal motivators; barriers to physical activity; and the role of significant others. Like the active participants of Pringle's (2008) research, those in Elley's (2007) study explained that the support of the GRx programme had helped them to get and to stay motivated. The barriers identified by the inactive group were similar to those described in Elley's (2007) work, and in other studies of exercise participation: obstacles relating to the physical environment (e.g., cost), physical

ability/health and psychological barriers (Cousins, 2003a; Elley, 2007; Pringle, 2008; Riddoch et al., 1998). Some participants in Elley's (2007) study reported fear of disease as a motivating factor for increasing their activity, a finding supported by other research describing exercise participation following a triggering health event (Plotnikoff et al., 2002a). Positive beliefs and attitudes toward physical activity, self-efficacy, social support and an absence of environmental barriers have been correlated with physical activity behaviour and were distinguishing attributes of the active participants in both studies of GRx patients (Bauman et al., 2002; Clark et al., 1999; Cousins, 2003b; Elley, 2007; Marquez et al., 2004; Rhodes et al., 2007; Sallis et al., 2000; Trost et al., 2002; Umstattd et al., 2006).

Pringle's (2008) study has generated the most in-depth information from the perspective of GRx patients to date, but rather than explain how GRx patients understand success, this study has explored factors influencing the uptake of a professionally dictated perspective, as well as the patient experiences that fit within each of these categories. All of these factors were considered retrospectively and in cross-section, and thus no information is available concerning the attitudes or beliefs of the participants prior to, or during the time they modified, or intended to modify their exercise behaviour.

In each study, the variations arising from the unique circumstances and motives of the participants demonstrate that the understanding of success not only varies according to perspective, but is also bound by context. As a consequence, the perspective of those patients attending the GRx community programme cannot be determined through the literature. However there are some similarities in the participant groups described.

2.4 Concluding Remarks

This literature review has explored two broad perspectives upon what success regarding physical activity and health may mean. The professional perspective endorses a largely objective and medical view that regular physical activity is necessary to reduce the incidence and impact of chronic disease. Psychosocial benefits and other quality of life measures are endorsed in some of the literature, but are most prominent in research which has addressed the perspective of patients themselves. The key commonalities in the literature upon physical activity engagement are intrinsic enjoyment of exercise, psychosocial benefits, general well-being, the influence of others and functional status.

Previously, no study had examined the understanding of success in patients while they are engaged in a physical activity referral intervention. Although the patients' perspectives have been examined in retrospect, the existing literature appears to have assumed rather than questioned whether patients themselves were truly content with their achievements. Studies examining patient's prospective goals are also limited, as they cannot determine whether desired outcomes constitute success when they are realized. A longitudinal approach is needed to capture the dynamic nature of cognitions and behaviours that occur as patients work towards and achieve, or fail to achieve, goals relating to their physical activity and health. The next chapter presents theoretical approaches to physical activity promotion relevant to the understanding and achievement of success.

Chapter Three: Theoretical Approaches to Behaviour Change

3.1 Introduction

Theoretical models have shown significant potential for enhancing behaviour modification when it is used to guide the planning and implementation of interventions (Contento et al., 1995; Hutchison et al., 2008a; Mettler et al., 2000; Norman et al., 2000; Nutbeam et al., 1999; Riddoch et al., 1998). The application of theories has tended to focus on cessation of harmful and intermittent behaviours such as smoking or cervical screening (Kiviniemi et al., 2008); it is arguably more difficult to explain complex practices like physical activity that involve multiple behaviours enacted on a regular basis.

A general assumption underpinning these theories is that individuals are *motivated* to pursue goal directed behaviour. Motivation describes the need, drive or desire to act in a certain way to achieve a certain goal. It is a concept that encompasses intrinsic processes occurring within the individual's psyche, as well as extrinsic factors in physical and social environments that influence the initiation and maintenance of behaviour change. *Intrinsic motivation* for exercise describes the desire for feelings of well-being, enjoyment and achievement, while *extrinsic motivation* concerns tangible rewards such as praise, physical appearance or monetary gain (McAuley et al., 1991; Petri et al., 2004; Ryan et al., 1997).

Numerous studies have investigated the correlation between physical activity behaviour, environmental and psychosocial factors and the way these factors interact with theoretical constructs. The strongest influences of gender, socio-economic status and culture upon physical activity level are not readily open to change (Armitage et al., 2000) Yet modifiable psychosocial factors and theoretical

constructs are well established as positive correlates of exercise intentions and actual behaviour (Bauman et al., 2002; Booth et al., 1993; Clark et al., 1999; Marquez et al., 2004; Rhodes et al., 2006; Rhodes et al., 2007; Trost et al., 2002; Umstadtd et al., 2006).

Since no single theory is superior in its ability to predict and explain physical activity behaviour, discussion in this chapter is limited to relevant models that have been empirically associated with physical activity (Hutchison et al., 2008b; King et al., 2002; Riddoch et al., 1998; Weinstein, 2007). The first section of this chapter outlines the stages of change model and protection motivation theory. The final section considers goal setting, success and conceptions of self as they relate to health behaviour.

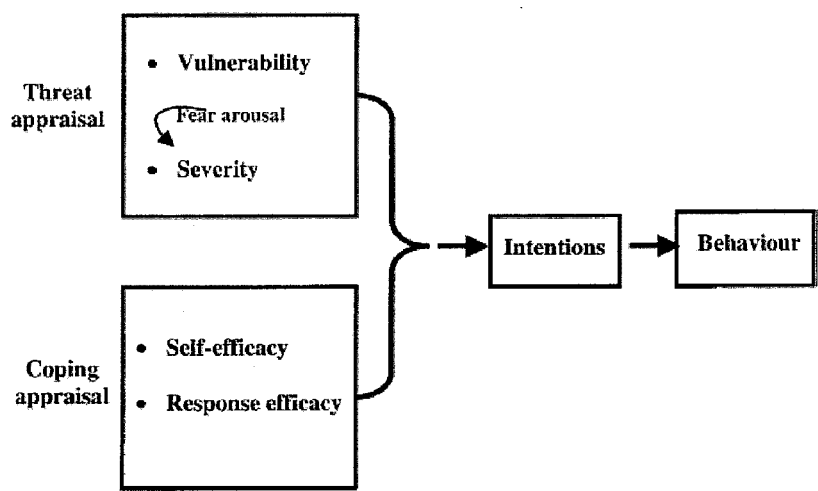
3.2 Stages of Change Theory

Originally developed by Prochaska and DiClemente (1983), the stages of change theory explain the psychological stages that individuals pass through as they attempt to change their behaviour. Although initially developed to explain smoking cessation, the stages are considered common to a range of behaviours (Nutbeam et al., 1999). It is assumed that behaviour is more likely when an individual has high self-efficacy and perceives advantages of the behaviour to outweigh the disadvantages (decisional balance). Stage one, pre-contemplation, assumes the individual has not yet considered changing or is consciously intending *not* to change his or her behaviour. In the second stage of contemplation, behaviour change is considered but no specific plans are made. Once the commitment to change has been made, the individual develops a plan in the preparation stage, and moves into the action stage once the behaviour has been initiated. Sustained performance of the new behaviour is described as the maintenance stage, and if continued long enough the individual can terminate the cycle. Alternatively, they may relapse back to former behaviours (CPRC, 2000; Mettler et al., 2000).

3.3 Protection Motivation Theory

Protection motivation theory describes health behaviour as a form of coping, depicted in Figure 3.1 below (Plotnikoff et al., 2002b; Rogers, 1975). Motivation to undertake the behaviour (protection motivation), is the product of two appraisal processes: 1.) threat appraisal (perceptions of the severity and vulnerability to a disease) and 2.) coping appraisal (self-efficacy to perform the behaviour and value of the behaviour). The theory assumes that perception of disease threat increases motivation to change, and that change is more likely when the behaviour is considered useful for reducing that threat (response efficacy) and the individual believes in their ability to successfully modify their behaviour (self-efficacy). Information from within the individual and from external sources influence an 'adaptive' behavioural response to improve health by performing the behaviour. Alternatively, a 'maladaptive' response, such as avoidance and denial, can result if the person considers that there are significant disadvantages of changing, or significant advantages of continuing their current behaviour (similar to decisional balance in the stages of change theory) (Armitage et al., 2000; Rogers, 1975).

Figure 3.1: Framework of Protection Motivation Theory
(Plotnikoff et al., 2002b).



Assuming that threat perception results in behaviour change, the risk of chronic disease, should, in theory, result in behaviours that will reduce the risk. On the contrary, research indicates that many individuals fail to engage in sufficient levels of exercise despite

awareness of the health risks of inactivity and knowledge about the health benefits of being active (Plotnikoff et al., 2002a).

Health risks are often identified by professionals, and this may influence a patient's willingness to engage in the necessary behaviours. Studies of health screening such as mammography, have shown that risk perception enhances screening behaviour (Olson, 1992). However, screening behaviours require minimal self-efficacy and involve a small and short-lived investment of effort to reduce an immediate threat. Physical activity on the other hand, involves significant investment of effort over an indefinite period of time to reduce a threat of disease in the distant future. The effect of information framing has produced differential responses to health risks in experimental research. A study compared two patient groups asked to recommend treatments for a hypothetical friend with a terminal illness. Significantly surgical treatment was more likely to be recommended by the group presented with the probability of surviving the surgery, compared with the group who had been presented with the equal opposite probability of death (Olson, 1992).

Some authors suggest that forming patient goals around the risk of disease can lead to well-intentioned efforts that have a detrimental effect on behaviour. Plotnikoff et al's (2002) study of 800 Australian adults at risk of cardiovascular conditions showed that exercise intentions and actual behaviour were positively correlated with self-efficacy and response efficacy. However, perceived risk and severity of cardiovascular disease were negatively correlated (Plotnikoff et al., 2002b).

3.5 Theories of Goal Setting

Goal setting has been demonstrated as an effective cognitive-behavioural strategy and is commonly employed in physical activity interventions (Shilts et al., 2004). Goals have been defined as “internal representations of desire states, where states are broadly construed as outcomes, events, or processes” (Austin et al., 1996 p. 338). The process of goal setting involves a series of stages preceding goal attainment that can be simplified into four main steps:

- 1.) recognizing the need for change
- 2.) establishing a goal
- 3.) adopting goal-directed behaviour
- 4.) self-rewarding goal achievement (Locke et al, 1980 cited in Shilts et al, 2004).

Once a goal is pursued, feedback and appraisal processes inform decisions about whether to modify behaviour to continue striving toward the goal, modify the goal, or abandon the goal (Austin et al., 1996).

3.5.1 *Classifying Goals*

Ford et al.'s (1987, cited in Austin et al., 1996) taxonomy provides a systematic way of classifying goals according to whether the outcomes relate to factors within the person, or the person's relationship with the environment. An abbreviated version of the taxonomy is provided in Table 3.1 below (adapted from Austin et al., 1996). The intention of a goal may be to either 'approach' a desired state, or 'avoid' an undesirable one. A simple example is exercising to improve a sense of wellbeing (approach goal), versus exercising to avoid heart disease (avoid goal). Research has shown that framing the same endpoint as an approach goal is more effective than framing it as an avoid goal (Austin et al., 1996; Elliot et al., 1997). Avoid goals have been associated with less satisfaction and more negative feelings about goal progress; decreased self-esteem, feelings of control and feeling less competent in regards to goal pursuits (Elliot et al., 1997).

Table 3.1: Abbreviated taxonomy of goals.
 Adapted from Ford et al., 1987, cited in Austin et al., 1996.

Goal		Desired consequences	
		Positive/approach	Negative/avoid
Within-person			
Affective	Happiness	Experiencing feelings of joy or satisfaction	Avoiding feelings of emotional distress or dissatisfaction
	Arousal	Experiencing excitement or heightened arousal	Avoiding boredom or stressful inactivity
	Tranquillity	Feeling relaxed and at ease	Avoiding stressful over-arousal
	Physical wellbeing	Feeling healthy, energetic, or physically robust	Avoiding feelings of lethargy, weakness or ill health
Cognitive	Positive self-evaluations	Maintaining sense of self-confidence, pride or self-worth; expanding one's limits	Avoiding feelings of failure, guilt or incompetence
Person-environment			
Social assertions	Individuality	Feeling unique, special or different	Avoiding similarity or conformity with others
	Self-determination	Experiencing a sense of freedom to act or make choices	Avoiding the feeling of being pressured, constrained or coerced
	Superiority	Comparing favourably with others in terms of status or success	Avoiding unfavourable comparisons with others
	Resource acquisition	Obtaining approval, support, assistance, advice or validation from others	Avoiding social disapproval or rejection
Social integration	Belongingness	Building or maintaining attachments, friendships, or a sense of community	Avoiding feelings of social isolation or separateness
	Social responsibility	Keeping interpersonal commitments, meeting social role obligations, and conforming to social and moral rules	Avoiding social transgressions and unethical conduct
	Resource provision	Giving approval, support, assistance, advice or validation to others	Avoiding selfish or uncaring behaviours
Task	Mastery	Meeting a challenging standard achievement, or improvement	Avoiding incompetence, mediocrity or decrements in performance
	Management	Maintaining order, or productivity in daily life tasks	Avoiding inefficiency or disorganisation
	Safety	Being unharmed, physically secure, and free from risk	Avoiding threatening, depriving or harmful situations

3.5.2 Goal Characteristics

Evidence that certain goal characteristics are more conducive to goal achievement than others offers a potential target for enhancing the effectiveness of this strategy (Diener et al., 1978; Dweck, 1975; Dweck et al., 1988; Levack et al., 2006; Shilts et al., 2004). Factors known to influence the likelihood of achievement include whether the goal is self-selected or assigned (Shilts et al., 2004), the level of difficulty (Nothwehr et al., 2007), whether it is behaviourally-oriented or outcome-oriented and whether it is short-term or long-term (Button et al., 1996; Shilts et al., 2004; Smitherman et al., 2007). There is a lack of consistent evidence that self-selected goals are more effective than assigned goals, however, possible influences include the type of behaviour, and the context and extent of concordance between personal goals and values. There is strong evidence that a slightly difficult, yet attainable goal results in better performance compared with no goal, or an easy goal (Austin et al., 1996; Locke et al., 1988; Shilts et al., 2004). Some evidence suggests that long-term goals and those relying on numeric or physiologic outcomes are less likely to be achieved (Wolpert, 2001; Nothwehr, 2007; Shilts et al., 2004) than short-term behaviourally-oriented goals (Nothwehr et al., 2007). The specificity of goals, defined targets rather than general or vague goals, are believed to be more effective (Shilts et al., 2004).

3.5.3 Operant Conditioning and Behaviour Change

Temporal influences upon the achievement of short-term and behaviourally-oriented versus long-term and outcome-oriented goals may function according to the principles of operant conditioning. Behavioural modification occurs through the receipt or withdrawal of consequences immediately following the behaviour. When positive consequences ensue (positive reinforcement), the behaviour is more likely to be repeated, whereas negative consequences (punishment), mean that the behaviour is less likely to recur or will diminish in frequency. If the behaviour ceases completely, the behaviour is said to be 'extinct'. In the case of physical activity for example, behaviours can be encouraged using positive consequence such as praise, or by withdrawing negative consequences, such as a reduction in the perceived threat of a disease. Exercise behaviour is less likely to be repeated when negative consequences like pain occur, or when favourable circumstances are withdrawn, such as having less time available for other leisure activities (Cole, 1990).

The achievement of short-term goals can provide reinforcement soon, or immediately after physical activity (Wolpert et al, 2001). Long-term and outcome-oriented goals can be difficult to achieve for two reasons; firstly, because barriers are more likely to be encountered over time, and secondly, the time lapse between physical activity and the corresponding health benefit may limit direct connection with positive behaviours even when goal achievement is reached.

3.5.4 Goal Achievement Theory

Goal achievement theory describes different ways individuals think about goals and the standards used to judge their success. Different goal orientations have been empirically linked with different cognitive, affective and behaviour patterns (Diener et al., 1978; Dweck, 1975; Dweck et al., 1988). Originally developed in the education field as a way of modelling learning behaviour in children (Diener et al., 1978; Dweck, 1975; Dweck et al., 1988), this theory has applications in exercise psychology (DeShon et al., 2005; Docherty, 2006; Rogers et al., 2008; Shilts et al., 2004; Strecher, 1995) because it is possible to influence goals through external factors (Dweck, 2000), such as with rewards (Ames et al., 1977), social norms¹⁸ (Jagacinski et al., 1987) and feedback (Butler, 1987). Two broad categories of goal orientations are described by this theory, although both may co-exist in the same individual: *validation-oriented goals* (also known as performance, ego or extrinsically orientation goals) and *growth-oriented goals* (also known as mastery, task or intrinsically orientation goals) (DeShon et al., 2005). The existence of only two goal orientations has been questioned by some authors and is thought to differ in non-competitive exercise contexts (Gilson et al., 2008; Rogers et al., 2008).

¹⁸ *Social norm* describes experiences of social pressure to be physically active, e.g. 'people who are important to me will approve if I exercise'.

Validation-orientated goals focus on demonstrating ability, comparing oneself to others, gaining the favourable judgement of others and/or avoiding negative judgements. Goal achievement is seen as evidence of ability or competence, whereas failure to achieve the goal is perceived as evidence of inability or incompetence. Comparison with others (including favourable judgements of oneself) can occur when achieving goals, but validation-oriented individuals may purposefully seek these outcomes rather than focusing on personal development or improvement for its own sake (DeShon et al., 2005; Dykman, 1998). Maladaptive responses, such as task avoidance or a deterioration in performance are more likely when challenges are encountered in order to protect self-concept (Dweck, 2000; Dweck et al., 1988).

In contrast, growth-orientated goals emphasise the development of skills and abilities. They also define achievement by using self-referenced criteria. Success for growth-oriented individuals is associated with developing new skills and knowledge, or improving their own past performance (Dykman, 1998). In contrast to the validation-oriented response, challenges are met with adaptive responses, even the occurrence of failure is a form of feedback that be used to modify goal directed behaviour (Button et al., 1996; Dweck, 2000; Dykman, 1998).

3.6 Integrating Success with Behaviour Change Theories

The following comment frames discussion in the next section of this chapter, which focuses on the concept of success and how it relates to the setting and achievement of goals:

A sense of psychological success would likely be achieved when the person independently sets and exerts effort toward a challenging and meaningful goal and then goes on to succeed in attaining that goal (Hall et al., 2005 p. 158).

For the purposes of this thesis, success may encompass objective and/or psychological success arising from goal directed behaviour that may or may not be pursued through explicit goal setting.

3.6.1 Defining Success

Success is a colloquial yet complex term commonly associated with educational or career-related achievement; the influence of the meaning of success upon cognition and behaviour has previously been given little attention. It is clear that different understandings of success exist; therefore it is a concept that must be viewed from the eyes of the person experiencing it (Hall et al., 1977; Hall et al., 2005; Roback, 1939). Suggestions that *psychological success* is a stronger driver of behaviour than the desire for *objective success* necessitates distinction of these two understandings (Hall et al., 2005). It has been shown in organisational psychology research that objective success, such as the attainment of wealth or higher status in one's career, does not always occur with the attainment of psychological or subjective success.

Early research within the organisational management field suggests that the experience of psychological success is a necessary pre-requisite in making identity shifts. One study into the causes and effects of psychological success proposed a cognition-behaviour pattern: beginning with the setting of a goal, this was followed

by an exertion of effort during goal striving, changes in performance, and finally, a sense of psychological success. An enhancement of self-efficacy and self-concept¹⁹ ensues, as does a greater involvement in the task and the setting of future goals (Hall et al., 1977; Hall et al., 2005). When both psychological and objective success occurs together, recognition and feedback from others can promote further changes in self-concept (Hall et al., 1977; Hall et al., 2005; Locke et al., 1988). The experience of psychological success is therefore considered a crucial step in modifying identity and enhancing perceptions of self-efficacy that moderate future behaviour (Hall et al., 1977; Hall et al., 2005; Markus et al., 1986).

3.6.2 Psychological Success and Changes in Self-concept

Changes in self-concept have also been discussed by health behaviour theorists, who propose that identity shifts are necessary for successful behaviour change (Kearney et al., 2003). Qualitative research suggests that an identity associated with physical activity can be developed in formerly inactive individuals attending exercise referral programmes. In Hardcastle et al.'s (2005) qualitative longitudinal study of 15 British women, the formation of an 'exerciser' identity (favourable beliefs about oneself in regards to exercise) occurred during the course of a 10 week community-based exercise programme. Unstructured interviews held at three points during involvement with the programme determined that positive exercise beliefs and attitudes about exercise had become integrated with the identities of these women. The findings further revealed that an 'exerciser', or active identity, was adopted both through a sense of achievement, and through the social interaction that occurred whilst participating in the programme.

¹⁹ *Self-concept* can be thought of as relatively stable self-assessments that may include personality attributes, self-knowledge about skills, abilities, occupation and interests, and awareness of physical attributes. Self-concept may also involve perceptions about oneself in the future, where an individuals' ideas about desired and undesired self-concepts in the future may function as an evaluative measure of present state and driver of behaviour (Markus et al., 1986).

Kearney et al.'s (2003) grounded theory approach (used to review the evidence for and against critical turning points in health behaviour change) highlights the importance of identity change. The model of behaviour change proposed by the authors describes how a critical self-evaluation process raises a person's awareness. This awareness constitutes a realization that their current situation is discordant with personal goals and values. It is also thought to precede attempts to change their health behaviour. If the initial attempt to change is successful, and there are noticeable rewards, the behaviour is reinforced and internalization of new self-concepts can occur. Similarly, in the stages of change model, these steps correlate with movement from the pre-contemplation, to contemplation and into the action stage once behaviour change is initiated. Moving into the maintenance phase involves a full identity shift accompanied by knowledge of how to motivate and maintain behaviour change. However, Kearney et al.'s (2003) belief that constant revision of one's behaviour and identity is necessary over the life course suggests that the risk of relapse (back into physical) inactivity never ends.

Both the organisational and the behaviour change literature shows that a sense of psychological success is more likely to be experienced when objective outcomes are concordant with an individual's personal goals (Hall et al., 1977; Hall et al., 2005). Qualitative research has identified functional activities or limitations as the patient's language of goal setting. A collaborative approach developed from Randal et al.'s (2000) work with functionally impaired patients proposes a three step process. Firstly, desired outcomes need to be carefully elicited from the patient, followed by exploration of the patient's daily and weekly activities to establish a context for the goals. Finally, measurable goals relating to the outcomes can then be set in accord with personal preferences and self-efficacy beliefs (Randal et al., 2000).

3.7 Conclusion

Considering the many barriers to activity and the prevalence of sedentariness, participating regularly in physical activity could be called a success in modern society. Both the literature review and theories of behaviour provided suggest that establishing goals, as well as the achievements and experiences of success for patients in the GRx programme, may help to enhance physical activity promotion. In the next chapter, the research philosophy and methods chosen for investigating the patient understanding of success are detailed.

Chapter Four: Choice of Study Design

4.1 Introduction to the Research Purpose and Study Design

This study aimed to gain an understanding of the concept of *success* in relation to physical activity and health as expressed by those patients attending the GRx community programme. A qualitative longitudinal approach was selected to explore changes in participants' understanding of success during a period of intended health-related behaviour change. This was achieved by gathering data through semi-structured interviews and by reviewing existing documentation. This chapter details the rationale and description of the study design chosen to address the research objectives. The philosophical position of the researcher will first be explained, followed by a discussion of the data collection and analysis methods employed, and will finish with a reflexive account of the researcher's influence on this study.

The choice of study design was guided by the following research questions:

How do inactive adults perceive success when attempting to modify physical activity behaviour for their health during their involvement in the GRx programme?

Does the understanding of success change during their involvement with the GRx programme? If so, how and why does this change occur?

What factors influence this understanding of success and what influences the changes that occur during their involvement with the programme?

What are the implications of this understanding of success for promoting health behaviours in the primary care setting and in intervention programmes?

4.2 Methodology

The researcher's perception of reality and beliefs about the creation and validation of knowledge ultimately shapes the collection and interpretation of the research data (Crotty, 1998; Whitton, 2007). This section will support the above theory while outlining the post-positivist beliefs of the researcher. These beliefs are based upon the assumption that a true reality exists with or without human perception of it all the while acknowledging that this reality cannot be perfectly understood (Guba et al., 1994; Peck et al., 1999a). Rather, human understanding is limited by the socialized values, beliefs and contexts which influence the interpretation of reality (Guba et al., 1994). Therefore, the findings of this study may offer a window into the experiences of the study participants, but these experiences are ultimately rendered through the eyes of the researcher. It is understood that the researcher is attempting to understand one aspect of complex individual realities, while accepting the influence of contextual and subjective factors (Morse et al., 1995; Whitton, 2007). Therefore, the knowledge generated in this study has been *constructed* during the interactions between the researcher and the participants, rather than being an objective uncovering of the participants' perception of reality (Mauthner et al., 2003). The purpose of this study was to gain an understanding of success through the common experiences of a specific group (Racher et al., 2003), but also to recognise that "multiple interpretations of reality may exist in parallel and evolve over time" (Racher et al., 2003 p. 466). In accordance with a post-positive philosophy there is thought to be no way of verifying absolute truth. To address this, the role of the researcher was reflexively considered, and multiple sources of data were used to triangulate the findings (Braun et al., 2006; Guba et al., 1994; Roberts et al., 2002). The findings can be considered unique to the context of this research. Furthermore, it is acknowledged that multiple truthful conclusions can be drawn from the data (Giacomini et al., 2000).

4.3 Research Design

4.3.1 Qualitative Design

Exploring a complex and under-researched concept such as the perception of success during a period of involvement with a behaviour change intervention is well-suited to a methodology capable of generating knowledge grounded in human experience, beliefs and attitudes (Giacomini et al., 2000; Joffres et al., 2004; Morse et al., 1995; Sofaer, 1999; Stamm et al., 2008; Wilson et al., 1991). As Green and Thorogood state, “questions that warrant a qualitative approach are those that aim to understand the perspectives of participants, to explore the meanings participants give to a phenomena, or to observe the process in depth” (Green et al., 2004 p. 30). As such, this study design was selected as the most suitable means of producing the depth of detail required to understand multiple perspectives on success and its relationship with physical activity behaviour (Giacomini et al., 2000; Jaye, 2002; Wilson et al., 1991).

4.3.2 Longitudinal Design

Taking a longitudinal approach in qualitative research is recognised for its utility in studying processes of change that occur over time (Holland et al., 2003). Qualitative data was collected through two phases of in-depth interviews held five months apart. These interviews aimed to explore the understanding of success while participants were engaged in the GRx intervention (Farrall, 2006). This temporal view allowed the changes and influences upon participants’ experiences to be studied (Holland et al., 2003). These variations could not have been captured at a single point in time, rendering a cross-sectional study design unsuitable for this research project (Farrall, 2006).

Data gathered in the first interview phase was also used to inform the development of the second interview schedule. This enabled a greater depth of exploration

regarding patient perspectives as a changeable phenomenon. Information that the participants had provided (e.g. goals that had been set) in the first interview was reiterated in the second interview, which allowed participants to reflect upon processes of change throughout the duration of the study (Farrall, 2006; Stamm et al., 2008). One of the advantages of a longitudinal approach is that participants may have been more likely to recall recent experiences, such as the events surrounding their involvement with the GRx programme (Farrall, 2006).

The time frame for enrolment on the GRx programme ranges from 3-6 months depending on the discretion of the local Sports Trust. During this time, it is generally expected that patients will shift from being inactive to undertaking at least 30 minutes of moderate-intensity physical activity most days of the week. From a professional perspective, ideal outcomes at the end of this period include participants eating more healthily, having achieved or making progress toward their goals, and feeling able to maintain their activity level without the support of the programme. The duration of five months between the interviews was chosen to align with this intervention period and to allow sufficient time for behaviour change to occur. It was also pragmatically related to the time limitations of the research project.

4.3.3 Sampling

The Population of Interest

The population of interest was inactive adults participating in the GRx programme. In order to be eligible for a GRx, these people must have been previously diagnosed with (or were at risk of developing) chronic health conditions. They, or their doctors, must also have expressed dissatisfaction with their current level of physical activity. Strategies such as motivational interviewing and goal setting that are undertaken in the programme are all relevant to the theoretical basis and practical implications of this research. Prospective participants were sought from the Thursday morning Christchurch GRx community group programme, convened by Sport Canterbury.

Sample Size

It was considered that a sample size of between 12 to 15 participants would provide sufficient variation in the participants' backgrounds and experiences to explore the multiple understandings of success in this group (Hansen, 2006). Purposive sampling was used to recruit a small purposeful sample of participants who could provide detailed insights into the research topic through their experiences (Giacomini et al., 2000; Green et al., 2004; Hansen, 2006; Joffres et al., 2004). However, selective sampling for specific characteristics was not feasible in this study due to the small number of willing and eligible participants. Smaller sample sizes are common in qualitative methodologies that emphasise high-quality, in-depth data rather than larger sample sizes typical of quantitative studies (Anaf et al., 2007; Giacomini et al., 2000; Green et al., 2004; Hansen, 2006; Stamm et al., 2008; Wilson et al., 1991). The in-depth interviews and GRx enrolment forms were regarded as comprehensive data collection methods that could provide a sufficient depth of information to fully explore the research topic even in a small sample size (Giacomini et al., 2000; Stamm et al., 2008; Wilson et al., 1991). As a qualitative

study, the findings can not be generalised in the same sense that quantitative research is, but the concepts may be transferable to similar situations.

4.3.4 Eligibility Criteria

Because this investigation was principally concerned with the GRx programme, eligibility to participate in the study was limited to those patients who had been issued a current GRx by a registered health practitioner. They must also have been attending the GRx community programme. Initially, participation was to be limited to individuals enrolled three months prior to the commencement of the study. For practical reasons, the enrolment date was lifted as an eligibility criterion because the low number of recent enrolments would have limited the recruitment of a sufficient sample size. The implications of having participants enrolled in the programme earlier are not insignificant; changes in physical activity levels were more likely to have occurred closer to the time of enrolment, while initial goals may have been achieved, abandoned or forgotten; changes in the understanding of success may already have occurred; and recall of experiences may have been poorer.

4.3.5 Recruitment and Selection

A verbal presentation of the study was given by the researcher at the Thursday morning group session, followed by an invitation for participants to initiate contact with the researcher for more information and/or to volunteer. Informational flyers were made available, and the researcher was available at the programme venue for four consecutive weeks following the presentation to provide further information, answer questions and recruit volunteers.

Fifteen programme participants volunteered to participate. Prior to commencing the interviews one volunteer withdrew, citing anxiety and impaired verbal communication as the reason for non-participation. The maximum sample size of fifteen was achieved with the recruitment of one additional participant. One participant in the first interview was excluded from the study due to the absence of an official GRx. At the time of recruitment, prospective participants were informed that a current GRx was required to be eligible, and all volunteers verbally confirmed that they had been issued a GRx. Access to GRx enrolment information held by Sport Canterbury required completed research consent sheets, which were completed at the first interview. Consequently, the participants GRx status could not be verified in advance, and it was later determined that the participant who was later excluded had never received a GRx. This participant attended the programme casually with her spouse and was listed on the informal roll taken at the programme venue. GRx staff were unaware this participant had not received a GRx until attempts were made to locate an electronic profile on Sport Canterbury's database, and to retrieve a hard copy of the script. Both attempts proved unsuccessful. The second interview was not conducted with this participant and information gathered from this participant at the first interview did not contribute to the analysis.

The first GRx received by each of the fourteen referred participants ranged between July 2002 and May 2008. Renewal of a patients' GRx is required after a period of 3 months, and at least five of the participants' scripts had been renewed at least once. At least a further three participants had been previously discharged from the GRx programme without having ever attended the group sessions, but later had their scripts reissued and subsequently enrolled on the group programme. The reasons for discharge were recorded as: 1.) not being ready for activity; 2.) transport and financial difficulties in attending the programme; and 3.) GRx support not being required.

Despite directing the request for volunteers at those enrolled in the last 3 months, few of these individuals chose to participate; the self-selected sample was predominantly made up of those who had been attending for some time. While the reasons for the poor responsiveness of recent enrolments are difficult to assess, it is possible that involvement in the study was perceived as an additional burden to a major lifestyle change. Moreover, many of the patients had recently been diagnosed with a chronic illness and were still coming to terms with this news. Another reason was inferred from the four participants who had enrolled in the three months prior to recruitment: several of them reported being apprehensive about the usefulness of their participation, as they felt their limited time on the programme meant they had little to contribute to the study. While these are two possible explanations for the low responsiveness of recently enrolled GRx participants, there are likely to be other reasons as well.

The Influence of Incentives

Prospective participants were verbally informed that potential benefits of their involvement included enhancement of the GRx programme – an enhancement which could benefit future patients. They were also informed that no potential harms had been identified arising from participation in this research. This

information was reiterated in the printed material given to participants, which also detailed the reimbursement for participants' time.

All participants who agreed to be interviewed received a \$20 grocery or fuel voucher for each of the interviews they participated in. Several were hesitant to accept the reimbursement, stating the sole reason for volunteering was to help future GRx patients. Therefore it was felt that the prospect of reimbursement was not the primary motivator for the majority of participants. The one participant who may have been motivated by the incentive had been informed of the reimbursement through another research participant. This person also sought confirmation of the reimbursement prior to agreeing to be interviewed, and was less willing to volunteer information during the first interview than other participants.

The sample is considered self-selected because it was up to the participants to express their interest to the researcher. As a result, this sample may not be an accurate representation of the whole group. Moreover, volunteer bias may have resulted in different characteristics between those who chose to participate and those who chose not to (Collier et al., 1996). These participants may have had greater motivation and interest in their physical activity and health than non-responders.

Relationships between Participants

Two husband and wife couples volunteered; each spouse participated as a separate participant. In each case, one spouse initiated contact with the researcher and this may have influenced the decision of their partner to volunteer. Three of the volunteers were first degree blood relatives; one of who was encouraged to participate by the other family members. One of the three first degree relatives

reported enrolling to support one of the other family members. Two of the participants were close friends prior to enrolment, while the wives in the two married couples reported that they initially only attended to support their husbands. However, all three participants said they continued to attend for their own benefit in addition to being a support person. These relationships made the likelihood of discussion between themselves regarding their participation in the research project a probable, yet unavoidable influence on this study. As the research participants all attended the same group session, discussion between the participants may also have occurred. Potential impacts on the study include being aware of the interview questions in advance, which would have allowed time to deliberate upon the topic and potentially alter an interviewee's response.

The ethical provisions of this research allowed a support person to be present during the interview. Regarding the two married couples enrolled in the programme, each spouse was present during their partner's interview and actively contributed to the discussion. The participant who was excluded from study was also the spouse of another volunteer, who contributed to the first interview and was present during the second interview of their spouse. The presence of another person may have influenced the answers of participants, potentially making them reluctant to discuss sensitive topics or to talk openly about their perspectives. The interviewees also had a tendency to mirror phrases of their spouse, and it is impossible to know whether this is an accurate reflection of their true thoughts.

None of the participants required an interpreter to help them understand what the study was about, or to be present during the interviews.

4.4 Data Collection

Subsequent to receiving the participants' written permission, three sources of data were obtained:

1. Two phases of semi-structured interviews:
 - a. Interview one.
 - b. Interview two: five months after interview one.
2. GRx patient data – routine enrolment forms and follow-up information.

Multiple Sources of Data

To support the credibility of the study and to ensure that a sufficient depth of information required was obtained, multiple data sources were gathered (Giacomini et al., 2000). Multiple sources of data were used to provide a comprehensive understanding about the research topic and were not used for the purpose of qualifying or refuting the results from each source (Barbour, 1998; Giacomini et al., 2000b; Hansen, 2006).

4.4.1 Semi-structured Interviews

Semi-structured interviews were selected to obtain detailed data, which in turn was required to investigate the participants' perspectives in detail (Roberts et al., 2002). This form of in-depth data collection provided the flexibility to fully explore and pursue issues of interest that were raised, while simultaneously giving a general structure across all of the interviews to allow for comparison (Wilkinson et al., 2003).

Semi-structured interviews were also helpful to avoid imposing prior categorisation and assumptions upon the participants' responses, which is more likely to occur with structured interview methods (Giacomini et al., 2000; Wilkinson

et al., 2003). Individual in-depth interviews are generally considered more suitable than focus groups for the sharing of personal experiences, beliefs and attitudes, and for exploring each individual's perspective in detail (Roberts et al., 2002). One of the assumptions underlying more structured data collection methods is the notion that beliefs and attitudes are generally stable and consistent (Wilkinson et al., 2003), which opposes the research purpose of exploring changes in perspectives over time. Open ended questions also gave participants the freedom to follow non-rational or emotional trains of thought, to express ambivalent or contradictory beliefs and to generate spontaneous responses that could have been impeded with a structured interview (Giacomini et al., 2000; Jaye, 2002; Wilkinson et al., 2003).

Development of the Interview Schedule

In both interview phases, a semi-structured interview schedule (informed by the research objectives and literature review) was used to probe participants' perspectives and experiences about their health, physical activity, goals and understanding of success.

The original semi-structured interview schedule was pilot tested with three volunteers. One of these was an acquaintance of the researcher, while two other participants were approached from a physical activity programme similar to the GRx programme. Pilot testing was conducted primarily to further develop the interview schedule and to ensure familiarity with the recording equipment and interview technique; the data collected during the pilot test was not included in the analysis. The schedule was revised following the pilot testing and reflexively adapted throughout the phase one interviews. The fluidity of the concept of success was explored longitudinally by collecting data from two phases of interviews over a five month period. The revised version of the phase one interview schedule is provided in appendix F.

Conducting the Interviews

With the written permission of participants, the interviews were audio taped on a dictaphone to allow verbatim transcription. Many of the participants appeared self-conscious about being audio recorded, and it is possible this may have altered the accounts they provided during the interviews (Wilkinson et al., 2003). Despite reassurance of their confidentiality, a number of the interviewees specifically requested that no one other than the researcher listen to the audio tape. All of the interviews were conducted and transcribed by the researcher. In addition to careful checking and re-checking of the transcripts, this reduced the potential for transcription errors and ensured consistency across the data collection and analysis (Easton et al., 2000).

Participants were given the choice as to whether the interview was conducted (at a time of their choosing) in their own home, or on the premises of the University of Otago, Christchurch. All chose to be interviewed in their own homes. The consent forms were completed and collected at the interviews. Both interviews one and two ranged between thirty to ninety minutes.

The interviews started by asking the interviewees how they came to be involved with the GRx programme. This naturally led into discussion of their health conditions, the impact of their health conditions upon their lifestyle and their experiences within the public health-care system. Other questions included the types of goals that had been set when enrolling on the programme, what they hoped would be different in the coming months, and their interpretations as to what constituted a successful outcome. Later in the interview, they were asked to recall an experience where they felt they had been successful, and an experience where they felt they had been unsuccessful. This experience did not have to pertain to their health or lifestyle. Each interview concluded with the interviewee being asked if there was anything further they wanted to add or if they had any questions

for the interviewer. The participants were informed that they would be contacted prior to their second interview.

The second set of interviews was carried out five months after the phase one interviews. This was done in order to explore changes in the understanding of success over time. Development of the phase two interview schedule continued as the literature search progressed. The questions were tailored to follow up on the individuals' goals and expected outcomes reported in the first interview (Britten, 1995; Farrall, 2006; Roberts et al., 2002). The semi-structured interview schedule for the phase two interviews can be found in appendix G.

4.4.2 Patient Enrolment Forms and Follow-up Information

Enrolment with the GRx programme requires patient details to be routinely collected and held by Sport Canterbury. The enrolment and follow-up forms provided further contextual information to the data collected in the in-depth interviews. This information assisted with the interpretation of themes from the interview data (Giacomini et al., 2000). A copy of the patient enrolment form can be found in appendix A.

The enrolment and follow-up forms gave detailed information regarding participants' perceived wellbeing, attitudes to change. They also provided examples of current and intended physical activity, examples which were subsequently used to provide a profile of the participants. Exploring the understanding of success in relation to goal setting and achievement was viewed in light of specific goals that the participants had set when first enrolling on the programme. This allowed connections to be identified between the research findings and routinely recorded information in other physical activity interventions. Attaining this through existing documentation was preferable to

collecting it directly from the participants so as to avoid repetition and erroneous recall. This method was especially desirous when considering those patients who had enrolled some time before this research was conducted (Fitzpatrick et al., 1994; Wilson et al., 1991).

4.4.3 Ethical Issues

Ethical approval for this study was granted by the South Island B Ethics Committee. Full informed written consent was obtained from all participants in this study. Full details can be found in the participant information sheet in appendix C and the consent form in appendix D.

During the interviews, many sensitive topics were discussed. These included participants' family history of illness, memories of deceased friends and family members, terminal health conditions, life threatening experiences, loss of independence, low self-esteem and feelings of failure, mental stressors, significant financial problems and family and spousal conflict. Prior to commencing the interviews, participants were informed that they did not have to answer any questions that they were not comfortable with, and that they could terminate the interview at any time without giving a reason. They could also opt to have the tape recorder turned off if they inadvertently said anything that they did not wish to be recorded.

Maintaining confidentiality and protecting the identity of all participants was given paramount importance in this study, a provision that was clearly communicated to all research participants. Pseudonyms replaced the names of all participants and the names of all other people and places mentioned during the interviews; potentially identifiable information was not included in the reporting on the research findings. See appendix E for the procedures undertaken to store personal information and protect participant identity.

4.5 Data Analysis

4.5.1 Interview Transcripts

Thematic analysis was used to examine themes within and across the interview transcripts (Attride-Stirling, 2001; Braun et al., 2006) and the changes that occurred over the study period. This method was chosen for its flexibility and data-driven approach suitable for analysing the in-depth interview data (Braun et al., 2006; Wilkinson et al., 2003). Themes were generated by examining the accounts a) within each interview; b) across each interview phase; and c) comparing themes from the phase 1 with the phase 2 interviews, all of which were examined within the context of the existing documentation from the patient enrolment data. Further guidance in developing the themes arose from consulting existing theoretical models and by the research purpose of understanding the changing concept of success during a period of intended behaviour change. Both deductive coding (the theory driven coding on the part of the researcher) and inductive coding (data driven coding) were used (Wilkinson et al., 2003).

Despite widespread use of thematic analysis in qualitative research, the exact step by step process is often unclear (Braun et al., 2006). To assure the reader that this analysis was systematic and transparent, a distinction between *analysis* and *interpretation* phases is explained. The *analysis* phase describes the systematic sorting and classification of patterns in the data to derive the themes, whereas *interpretation* describes the inferred meaning of identified themes in light of the research aims (Jaye, 2002; Roberts et al., 2002).

Familiarization with the data and preliminary organising: Transcripts were read and re-read to gain familiarity with the data (Braun et al., 2006). Two copies of the transcripts were made; one untouched copy set was reserved as a reference transcript (Roberts et al., 2002). Words and phrases expressing similar concepts of

relevance to the research aims and objectives were identified (Fitzpatrick et al., 1994).

Development of a coding scheme: Loosely structured categories were established by colour-coding words and ideas that may be connected. Each transcript was analyzed individually at first, followed by a search of all transcripts for recurring patterns (Giacomini et al., 2000; Roberts et al., 2002; Straus et al., 1990). Prominent categories were recorded on a separate data sheet and different concepts condensed into a coding scheme.

The un-coded reference transcripts were re-read with the audio-taped interview playing to identify alternative codes or examples that did not fit, as these may have been previously overlooked in the transcripts (Braun et al., 2006; Marshall et al., 1989).

Generating themes and patterns: The coding scheme progressively combined similar codes until concepts could no longer be merged without losing their unique meaning in the context of the interviews (Braun et al., 2006; Giacomini et al., 2000; Jaye, 2002). A search of reference transcripts for missed or incongruent examples was undertaken to systematically consider each theme (Braun et al., 2006). The themes were then defined from the condensed coding scheme and assigned a descriptive name to express the nature of the participants' experiences within the framework of the study aims (Braun et al., 2006; Roberts et al., 2002; Straus et al., 1990).

Interpretation of the data and changes over time: The themes generated in each interview phase were compared and contrasted to establish areas of discordance between individual participants and between the collective themes.

4.5.2 Patient Enrolment Forms and Follow-up Information

Descriptive statistical analysis was undertaken on data obtained from the patient enrolment forms to provide a profile of the participants. This analysis also provided supplementary data on goal setting, physical activity behaviour and health conditions. This data set includes Likert scales, rating scales and other discrete variables which have been represented in frequency distribution tables.

A change in the enrolment forms used by Sport Canterbury in the months prior to the start of this research rendered this data source inconsistent between participants. The earlier form included general sections for staff to list the patient's medical conditions and current and intended physical activities. Early in 2008 these forms were replaced with the standard forms used by other Sports Trusts; these consisted of structured questions and prompts about medical conditions, perceived health status, importance of, (and confidence in) increasing physical activity and a section for goal setting. Given the incompleteness of the data, the additional notes and written comments made by the GRx staff were used to compensate for some of the missing information. In view of the small sample size, the statistical analysis is limited to describing patterns and relationships within this sample. Follow-up was also included, which detailed both formal follow-up information and informal verbal communications between participants and GRx staff.

4.6 Reflexivity

Reflexivity and awareness of the way knowledge is created is critical to recognising the influence a researcher has on the research process (Mauthner et al., 2003). It has been said that this “allows us to retain some grasp over the blurred boundary between the respondent’s narrative and our interpretations” (Mauthner et al., 2003 p. 419). Detailed in this section is a reflexive account of my presence in the research process and the subsequent implications for the data collection and analysis (Hansen, 2006; Mauthner et al., 2003).

The research findings were developed firstly through the interactive construction of knowledge that occurred between myself and the participants and secondly, by how the I made sense of their accounts (Mauthner et al., 2003; Peck et al., 1999a). Situated within the construction and interpretation of data rather than being a detached observer, the findings are inevitably infused with my assumptions, beliefs and prior employment on the GRx programme in Auckland. Furthermore, my personal experiences of physical inactivity and chronic disease in my family history will have inevitably influenced the interpretation of data (Jaye, 2002; Mauthner et al., 2003; Racher et al., 2003).

Prior to undertaking the interviews, I had initially viewed my previous employment experience in behaviour change counselling, motivational interviewing and person-centred (Rogerian) counselling as an advantage. Indeed, I felt at ease conducting the interviews. However, exposure to this very different style of interviewing meant that I frequently drew upon techniques such as reflecting back upon content and feelings. Because the techniques I used are associated with improved behaviour modification, the course of the participants’ behaviour may have inadvertently altered as a consequence of the study. For example, their activity level may have increased more than it would have if they had not been involved in the study. While this particular example may have come about because of the interview process, such an effect could

also arise through their knowledge of participating in a study. At times I also shared my own experiences, namely my family history of type 2 diabetes and heart disease. I noticed this tendency was especially apparent when discussing sensitive topics, during instances of marital conflict, or at times when I felt the participants appeared emotionally vulnerable. This shaped the interviews into an interactive exploration of past experiences, expectations about their health and physical activity habits, and their motivations within the context of their lives. Many of the interviewees later described their experience of the interview as being enjoyable, reporting that they had not previously had the opportunity to share and reflect upon these aspects of their lives. My approach during the interviews is likely to have helped establish rapport, which is arguably more critical in longitudinal research (Farrall, 2006). The potential shortcoming of this in relation to the research findings is the researcher's potential influence upon the interviewees' responses and subsequent attitudes and behaviour.

At the time of the first interviews, I informed participants that I was not a staff member on the current GRx programme, but that I had previously worked on the programme in Auckland. I further assured them that no information from the research would be shared with the GRx staff. Despite this, many of the participants seemed to perceive me as a GRx staff member and/or exercise specialist, which may have influenced their responses. However, they did not appear to consider me as a health professional or connected in any way with their health care (Wilkinson et al., 2003). This may have made them more forthcoming about their negative experiences within the health-care system. I attempted to mitigate potential power differences by briefly explaining my prior experiences of family illness. However, it must be remembered that power differences can never be fully eliminated, and in this case, they may even have been heightened by some of the patient's inaccurate perceptions. For example, many considered me to be a member of staff. Part way through the study I undertook casual employment on four sessions of the programme but I was careful to avoid involvement with the research participants.

I had expressed my interest in the research topic as stemming from experiences in my immediate family, many of who had suffered from chronic health conditions. Significantly, a number of the patients had been diagnosed with these same conditions I believe sharing this information may have made them more inclined to openly share their experiences. It certainly assisted in establishing an empathetic relationship. In contrast, I was conscious of how my physical appearance, age difference and different ethnic appearance, as well as a perceived difference in socio-economic status, may have made it difficult for them to relate to me.

Self-presentation is a potential issue in this study. This seemed to be a likely occurrence with some of the participants, but to what extent this impacted the data is unknown. Potentially, the content of their responses may have been altered to a more socially acceptable description rather than an expression of their true underlying thoughts (Wilkinson et al., 2003).

Throughout the data collection and analysis, I kept a reflexive record of my personal impressions and experiences with participants. This strategy has been identified as helping to “isolate personal biases, as well as to use personal experiences as analytically as possible” (Giacomini et al., 2000 p. 360). It also assisted me in framing and challenging later reflections about the findings (Stamm et al., 2008). However, not all of the sub-conscious assumptions I held, nor the impacts of my role in shaping the data can be fully acknowledged (Easton et al., 2000; Green et al., 2004; Peck et al., 1999b). For example, I may have been more inclined to interpret supportive rather than non-supportive evidence for my pre-formed hypotheses and favoured theories (Hsieh et al., 2005). It is possible that my emphasis on theoretical models may have overshadowed a data driven analysis, and for this reason, I significantly revised my initial coding scheme to ensure the thematic analysis was as inductive as possible.

4.7 Summary

This section has described and justified the study design used to undertake this qualitative longitudinal research. Covering the theoretical underpinnings of the study (rooted in post-positivism), it is recognised that subjectivity is a significant element of this study. This section has also detailed the rationale and procedures used for collecting the data through two phases of semi-structured interviews and through existing documentation. It has also provided a breakdown of the thematic analysis methods that were used to interpret the data. The final section of this chapter examined issues in the study design and finished with a reflexive discussion of the influence that the researcher's presence and assumptions wielded throughout the research process. Presented in the next section are the findings of the analysis. Starting with a profile of the participants, the identified themes are presented and followed by a discussion of the changes that were observed over the course of the study.

Chapter Five: Research Findings

5.1 Introduction

This section presents the participants' understanding of success in terms of their physical activity and health while they were involved with the Christchurch GRx programme. Four emergent themes are discussed alongside extracts from the interviews to provide detailed illustrations of the participants' perspectives. The first theme describes how and why they hoped to improve, maintain and avoid deterioration in their functional abilities. The second theme considers physical fitness achievements, consisting of short-term accomplishments in daily living activities and specific exercise pursuits. The third theme details how patients embedded physical activity into their lifestyle, and describes the barriers, enablers and the role of the GRx programme. The fourth theme proved to be avoiding the onset of, and the deterioration which inevitably accompanies, chronic disease. Finally, changes relating to the conceptualisation of success that occurred during the study period are discussed.

5.2 Participant Overview

The following overview is not intended to be a full portrayal of each participant. Rather, it is intended to present relevant background information and identify points of similarity (and difference) which assist in understanding the interviewees' narratives. Characteristics of the group are detailed by gender in Table 5.1 below. The median age of the 14 participants was 67 years with a range of 25 - 84. A strong bias towards female gender and New Zealand European ethnicity existed. Most of the group were retired but many were involved in part-time or voluntary work; only one participant reported being in full time paid work. All were parents and some were grandparents; only one had a child still living at home. Common health conditions and risk factors among the participants included ischemic heart disease, type 2 diabetes, hypertension and hyperlipidemia. The prevalence of cardiovascular

conditions meant a large number of the group had been referred from a cardiac rehabilitation programme (a similar intervention in many respects to the GRx,) but one that provides more intensive support and personalised exercise prescription. Participants referred from this intervention, as well as those who had attended GRx for longer periods of time, had modified their physical activity and other health behaviours prior to the study period. However, most of the participants still had aspects of their lifestyle that they wanted to modify during the study period, while some intended only to maintain their current level of activity.

Table 5.1: Participant Characteristics

		Female	Male	Total
Ethnicity	NZ European	9	3	12
	Other European	1		1
	Chinese	1		1
Time between referral and study recruitment	< 6 months	5	1	6
	6 months - 12 months	1		1
	13-24 month	3	2	5
	>24 months	2		2
Referral	cardiac rehab	6	3	9
	Requested referral to GRx	4		4
Activity level at GRx enrolment	1-2 days per week	1	1	2
	3-4 days per week	2	1	3
	5-7 days per week	5	1	6
	Not recorded	3		3
Activity level at last follow-up	1-2 days per week	1		1
	3-4 days per week	2	1	3
	5-7 days per week	8	2	10
Health Information	Cardiovascular condition	4	3	7
	Myocardial infarction	2	2	4
	Hypertension	4	2	6
	Hyperlipidemia	4	1	5
	Diabetes type 2	2		2
	Osteoarthritis	4		4
	Weight issues	3	1	4
	Mental illness	2		2
	Hypothyroidism	1		1
	Parkinson's disease		1	1
	Gastric reflux	1		1
	Obstructive sleep apnoea		2	2

5.3 Theme 1: Functional Ability

The desire to maintain and improve functional ability was one of the most predominant issues reported in the interviews. Physical function was related to beliefs they had about themselves, their ability to fulfil perceived responsibilities, and how they compared to adults of a similar age.

5.3.1 *Expectations and beliefs*

Physical ability was seen as an enabler in fulfilling personal expectations and in fulfilling family responsibilities. Success or failure was described by many of the group as the capability to fulfil these perceived or actual expectations.

Brian: The family, my success to them would be if I got a job, then they know that I'm, at least I'm [well enough]. (Interview 1)

Philippa: I'd be able to do a lot of things that I can't do now. Husband asks me for help and I, well I can't do it. So if I can get out there and help him, then you know. Just normal house things. (Interview 1)

Suzie: But if I didn't do that I would be virtually so incapacitated, it would be awful. 'cause some of my family, they wouldn't like it either, so. (Interview 1)

During discourse about failure, being unable to fulfil their own or others' expectations, and being a burden on their family, were described as highly undesirable outcomes of impaired physical function.

Jocelyn: ...I certainly wouldn't go and live with my children. I would much rather go into a complex than live with my children...I don't think it's fair. (Interview 1)

In the following passage, Betty discusses the worst part about being temporarily incapacitated when she developed cellulitis in the days leading up to Christmas several years earlier:

Betty: Well, feeling so helpless and not being able to do anything. You planned all what you were going to do and having to have other people turn round and do it for you. Yes that was hard. Just not used to that I guess. I'm not used to accepting help I suppose.

Interviewer: You don't like accepting help?

Betty: No, no, I don't. If I've said I'm going to do something I like to carry it through. 'cause we usually have a big 'do at my daughter's, and um, Boxing Day and it's the whole damn family, huge crowd. And I usually do a fair bit of the preparation. On Christmas day of course I couldn't do my share of that either. It was always something [I'd done] and suddenly I couldn't do it. (Interview 1)

Many of the participants acknowledged being older, overweight and/or unwell, but most held simultaneously positive beliefs about their health and identity.

James: It's um, just one of those things, bit of a disability, but it's accepted. I mean, I still regard myself as reasonably healthy. (Interview 2)

Ageing successfully for older participants meant maintaining their physical ability so that they could continue to live and function independently. Jocelyn for instance, explained how she and her husband were making the effort to '*keep our independence, so we can go as long as possible really, independently.*' (Interview 1)

The interviewees spoke of trying to avoid or minimise functional decline because of the consequences it would have on their independence. Being unable to walk or ending up in a wheel chair was described as especially worrying and the need to '*use it or lose it*' was stressed frequently.

Stephanie: yes, I want to be able to keep walking and not end up in wheel chair. That is very very²⁰ important for me. (Interview 1)

Jackie: ... we just want to keep well, we know that if you want to keep well you got to have exercise. That's all, if you don't exercise, you will just shrivel up. (Interview 2)

Some participants explained the 'horror' they associated with age-related decline. Becoming elderly, immobile and having to take medication were described as possible worst case scenarios.

Betty: ... I was very naughty, I hated it, I really hated taking medication. I had a horror of it, kind of thought myself as getting old, sitting there like my parents did with their pill boxes everyday. And I keep thinking oh it's not as bad as you people are saying and it's all right. Yeah. (Interview 1)

Suzie: I just remember them [grandparents] sitting in their chairs, and my grandmother would have [been] only 62, roughly, and she was so crippled with arthritis, rheumatoid arthritis. Which is the age I'm at now really, and she could hardly move. She was painfully slow getting up out of the chair and moving for her was a problem. Yeah, I don't want to be like that! (Interview 1)

This tendency of participants to distance themselves from an older, ageing or sick persona was apparent as they described their aversion to accepting help. They also disliked being associated with stereotyped activities or behaviours.

Suzie: And exercises in a chair. Well there's no way I'm doing that. That's for elderly people! (Interview 1)

²⁰ Emphasis added by speaker

Jocelyn: ... both my mother and grandmother, they used to go and have a snooze after their midday meal. And I laughed like the devil at that, I thought it was funny. 'What on earth are you going to sleep for then?' ...I haven't got to the stage of having a sleep in the afternoon. I'd really feel as though I'm getting an old lady if that happens. (Interview 2)

5.3.2 Social comparisons

Almost all of the participants compared their physical ability with that demonstrated by other people within the programme. In discussions with friends and other members of the Christchurch GRx group, they compared themselves favourably to other members. However, they were also accepting when they did not compare so well.

Suzie: I sort of, well I just check on some people and 'oh they can do things that I can't.'
(Interview 1)

Derren: I think 'gosh', you know, 'some of them are younger than us, they look crook.'
(Interview 2)

Brian: ...I like dancing, and a lot of people struggle, and Noeline (wife) and I can get up and have a dance. And I feel good, 'cause we know and they don't. But I don't compete against other people. (Interview 2)

Like Brian, the participants felt good when they were doing as well as, or a little better than other members in group exercise, but no one said they set out to be the best. The almost universal dislike of overt competitiveness also affected some of the participants' beliefs about goal setting. They saw it as a strategy for competitive sports and exercise, and thus did not consider it a viable strategy for themselves - despite pursuing specific, measurable and time-limited physical activity objectives.

Jocelyn: I don't think I even thought about goals. ... But you know, I just want to retain fitness, you know, and once a week is fine. We try, to exercise as much as we can through the week. ... Well I haven't got any plans, or anything that I want to do, I mean I don't want to go out and play tennis or anything like that. (Interview 1)

Derren: Yeah, I probably think about goals as, 'right, I'm going to be the best shot putter in the world', or you know, like that. So, I think my goal is to enjoy life, as much as possible. (Interview 2)

Achieving self-standards and doing what they were capable of in a group setting was described as the measure of success. The patients drew favourable comparisons primarily for their own satisfaction rather than to outwardly demonstrate superior ability or to make judgements upon others.

Frieda: Um, I try to do the best I can do. I don't worry about other people. I try to do what I can do. And if the girl next to me can do eight or nine push ups and I can only do two, well, that wouldn't worry me. (Interview 2)

Jackie: ... It is not a competition, that is not exercise, everybody's different. Some activities, some people can do better others are not as good and you do the things you enjoy and you [are] good at. And if you not good at it, just keep practising. You'll improve. You achieve your goal, yeah. (Interview 2)

Understandably, not one of the participants liked being unable to keep up with the others or feeling like 'one of the worst'. As Betty put it, social comparisons were considered highly relevant in a group exercise setting because 'people realise when somebody's slipping badly' (Interview 2).

Philippa: ... I used to go up there and say 'go on, you go ahead.' 'Cause I'm slow and I don't want to get in their way, slow them down, you know. But now I get up and down alright. Yeah and I walk around the programme three times, round that room, that hall there. Couldn't get around before, couldn't get round at all before.

Jackie: With the Tai Chi, I can do my postures and my breathing and that. I am better. You don't say to people, but you do it [for] yourself. (Interview 2)

Derren: Well, I don't think I put a conscious effort into being the best, but I don't want to be the mug either. ... Some people take it very seriously though. It sort of worries me, when people take things very seriously. (Interview 2)

For participants like James and Stephanie who experienced functional difficulties, keeping pace with others provided a yard stick for monitoring their own physical function.

James: Yeah, of course some of them are a bit younger, some of them are in their 50's and early 60's. Uh, but I'm quite pleased when I can do it, when I can keep up with the average one. Course there's some very young ones there, some there in their early 30's. Early 40's. So you're competing against them. (Interview 2)

Stephanie: And I was pleased at my aerobics class, that I was one of the ten best ones, say, what I could. I didn't have to be the very best, but a bit better than average. Yeah, I liked that. (Interview 2)

The group spoke admirably of older friends and relatives who they perceived to be active, fit and independent. It was clear that they aspired to embody similar attributes.

Fleur: ...Well, I look at my father in law, he's nearly, 80, he'll be 80 next month. And he had a heart bypass and he goes for a walk every single day. Around quite a big block. Takes him about 40 minutes to get round it. But I think that's pretty amazing, you know at 80, to do that. (Interview 1)

Jocelyn: ... she [mother-in-law] was one fit lady, she was never on medication, ever. ...And I mean, her blood pressure was perfectly normal. And, never had any heart problems, no problems really. I just say hope I can keep like that! (Interview 1)

5.4 Theme 2: Physical Fitness Achievements

The group described specific achievements related to '*physical fitness*', and how they used their own personal standards to monitor their progress.

5.4.1 Achievement

Achievements relating to exercise goals and daily living activities were greatly valued by the group. Some of their goals and achievements included being able to walk specific routes or to '*climb hills*', doing their grocery shopping independently, and completing housework.

Philippa: Well, my daughter said, 'Oh where's the money and I'll go in?' And I said, 'No I'm going in myself.' And I walk in, and it killed my legs. But I did it. And I still do it. I've gone into a couple of supermarkets now. (Interview 1)

Muriel: Little goals is my walking. At least I'm getting there.

Interviewer: What are some of those little goals?

Muriel: Um, little goal like, 'Right. I'm doing [cleaning] the lounge today.' I'll do the lounge. That's a goal to do my lounge. And then another goal was to do the kitchen. Don't worry 'bout any other room in the house, you do the kitchen. The little goals are bedroom, kitchen. Everything gets to be done. (Interview 1)

Almost all interviewees communicated feelings of accomplishment arising from enhanced confidence and improved physical fitness.

Daphne: Then I get home and I think 'I did what I wanted to achieve.'Felt proud of myself. (Interview 1)

Muriel: I achieve by getting up and going for a walk. I did it today so I can do it again tomorrow sort of thing. (Interview 2)

Physical activity served to provide both positive and negative feedback on their functional state. Brian's experience of falling over when out walking threatened the expectations he held about his physical fitness: *I was just shocked, I didn't realise how bad I was and I think that's why I sort of pushed myself just to see what would happen. Just out of curiosity. And I think, hell, you know, I'm shot. (Interview 1)*

Their achievements also had the power to discredit negative beliefs and prove their functional ability. Both the younger and older participants spoke of these achievements as providing feedback on their self-beliefs.

Suzie: I could say 'Haha I can do this.' You know? That I'm not an old lady and that I'm just physically able to do things as well as other people. (Interview 1)

Daphne: ...I try to prove myself wrong.

Interviewer: Prove yourself wrong? Can you give me an example?

Daphne: There's a hill. You gotta walk down to the beach and back up. I walked down it and I thought 'I can't get back up. I can't get back up.' But I got back up. 'cause I had been working it all up in my head 'You can't do it. You can't do it.' (Interview 1)

During the second interview, Daphne said she had proved her self-doubts wrong by climbing the particular hill '*probably about five times,*' and that affirmative

dialogue had now replaced her negative self-talk: *The second time I did, and I was like, 'Nah.' I was like 'Nah, I can do it.' So I keep doing it. (Interview 2)*

When discussing times they had felt successful, they spoke of challenging obstacles that they had overcome. When conversing about achievements that related to fitness and physical activity, recollections of successful past experiences, future intentions of pushing themselves, making gradual improvements and striving for a sense of mastery emerged as predominant motivating factors.

Philippa: It's mainly walking up those flights of steps. 'cause I've had trouble getting up flights of steps. And I've got up those two flights of steps, and that's, that's really good for me. Just two flights of steps, that's the thing I really, oh, I want to do a bit more.

Interviewer: What would be the most satisfying part of that achievement?

Philippa: Is knowing that I've done it. I've got up them. ... Each time I'm going up, it's getting a bit easier each time. And if I can get up those flights of steps, I can do a bit more things. (Interview 1)

Jackie: People can jump 100 times and if I jump 50 then it's ok, that's all I can do, I enjoyed it, it's still good. ... At least you have to try and put effort and see if you can improve more you know. If you do 50 times today, next week, you might be 60 and then you may reach the goal, 'Ohh! I can do 100!' (Interview 2)

Jackie: I really like to practice [Tai Chi], really nice like the master. You know, I look at the Master and I say 'gosh!' Each movement, the detail and it's so so lovely. And I ask him, 'how can you do that?' You want to be good, but do it properly. (Interview 2)

5.4.2 *Personal measures of progress*

Participants used their own personal measures to judge their physical achievements. Improvements in these self-standards were used to demonstrate their progress toward long term goals, such as being physically able to '*get the most out of life*' and '*see the grandkids grow up*'. They considered their achievements in terms of attaining a level of fitness necessary to enjoy life, fulfilling long term goals, and in some cases, ageing well.

Derren: ... We have to do a bit more [walking]. We got this [Tai Chi video] for wet days, and fine days we go walking. ... But uh, one of our ambitions is to get to one hundred [years old]. That's a goal. (Interview 2)

Betty: ...I need to be fit. So I guess to be as well as you can or you won't enjoy anything, if you haven't got your health you haven't got anything. (Interview 1)

Many participants wrote '*to get fitter*' on the goal setting section of the GRx enrolment forms. They also verbally communicated this goal during the interviews.

Fleur's written goal: Fitter – not sure what this will look like. Reduce breathlessness in cold wind.

Jocelyn's written goal: Keep fit.

The ten participants with a written goal verbally reported a great deal more goals during the in-depth interviews, which mainly related to functional ability, walking and exercises at the GRx programme. During these conversations, it became evident that a range of self-selected fitness measures were employed. Few of the group volunteered specific information about their fitness goals, but when asked *how they would know* if their fitness had improved, they described a range of self-selected measures and specific activities they used to gauge their progress. Most

measures were functional, such as breathlessness or less difficulty when completing household chores, climbing flights of stairs or walking. More objective measures included increasing the number of steps walked, reducing the number of rest stops required and reducing the time it took to complete specific walking routes.

Fleur: Probably more energy. Just feeling a lot better. Like gardening and that I can do a lot easier, don't get breathless now. I just notice things that I was sort of, struggling to do. But now I can do it. Like gardening and stuff, cleaning the bath and stuff. (Interview 2)

Jocelyn: We had to walk to and fro, and you know, it gave us, 'cause I wear a pedometer and we did nearly 6 and $\frac{3}{4}$ kilometres. But, you know our number of steps were over 10,000, so I was quite pleased, we had a reasonable day walking. It was over 10,000 so I thought we had achieved quite a good day. (Interview 2)

Brian: Well, in my walk I stop four times. I go round the block here and I stop four times. I probably, pushing myself I won't stop at all, I might just have to stop once, so I have improved. (Interview 2)

As well as being a way to monitor their progress, personal fitness measures were motivating ways to challenge their own standards.

Daphne: ...Trying to push myself, do the hill at the cliffs, walk up, to a cave thing, it takes about an hour and half. I usually take two hours to do it. Last time I did it, I did it in an hour. I'm gonna try and do it in half an hour. (Interview 2)

Even in competitive settings, achieving self-standards was preferable to achieving external standards,. Jocelyn illustrates this well when discussing the City to Surf challenge she had entered: ...in lots of ways it's really a competition within yourself too, isn't it, I mean, seeing that you can do it, and how well you can do it. (Interview 2)

5.5 Theme 3: Embedding an Active Lifestyle

Embedding an active lifestyle emerged as the third theme in the interviews, although much of the discussion centred upon barriers and enablers, and the role that the GRx programme had in facilitating participation.

5.5.1 Barriers and enablers

Establishing a routine of social and enjoyable physical activity was important to the group, but they also described the numerous influencing factors. Although Suzie's statement '*being active is what I want more than anything*' (Interview 1), serves to sum up the general opinion of the group, the strong focus upon factors that supported or hindered their participation in physical activity demonstrates the inadequacy of simply *wanting* to be active.

According to the GRx enrolment forms, the most common external factor which affected the participants' ability to exercise proved to be the weather. Several participants had written that problems with transport/parking and having company/support were also important. The external barriers described in the interviews mainly related to financial and transport issues, as Brian explains: *They keep trying get us to do the thing over at QEII, like to go swimming and all that, and we just can't afford the gym. You know, and then it's just too far over there. ...And you use the petrol to get over there, it's a long way you know.* (Interview 2)

During the interviews, internal factors affecting physical activity were described as lack of motivation or being '*lazy*,' as well as concerns '*about what other people think*'. However, on the enrolment forms they had listed motivation and enjoyment as the most common. Fleur expressed the same thought as other group members at the first interview by noting how '*the biggest thing is to keep motivated to keep doing it*' after having initially become more active, because it was a habit that was easy to break.

Brian: ...Sometimes I'll sort of, over a couple of months I might get into a bit of a routine when I try and do something, but then it will start to peter out a bit. (Interview 2)

When discussing the benefits they were expecting or already experiencing, the interviewees described regular activity as being essential for a holistic sense of wellbeing. The role of physical activity in promoting good mental and emotional health was a sentiment not limited to those who had experience of mental illness.

Suzie: I think, I would feel good. That's basically what it is.

Interviewer: You mean physically?

Suzie: I was thinking probably mentally. And emotionally I'd just feel better. (Interview 1)

Jackie: ...The body and mind, the whole one, you know the physical and mental, they all work together. (Interview 2)

One participant discussed his thoughts about maintaining his health by keeping active in a physical, mental, spiritual and social sense.

Derren: Well you must be social, you can't do two of them, or even three of them without being social, when you think about it. Physical you're mainly gonna do it with some other people. Mental, well, apart from reading and doing things like that, you gotta talk to people. And then spiritual, you meet the people at Church you know, they're all friends. Yeah, social I think might be a by-product of the other three. (Interview 1)

Later in the interview, Derren went on to explain how group exercise particularly benefits older patients: *Yeah it's not only the physical aspect, I think it's the social aspect that's gonna do more good to the oldies than anything. Yeah, 'cause I don't think you can have one without the other though. I mean, socially, if they just went and met socially, that's not gonna do them. Well, socially it'll do them good, but it's not going to do them much good physically.*

The participants explained how intrinsic enjoyment of exercise and social participation were fundamental to embedding an active lifestyle. Brian was frank about his need for enjoyment: 'If I enjoy I'll do it, if I don't enjoy, I'll just think "oh nah I can't be bothered today"' (Interview 2). Many of the group described the value they gave to their weekly involvement in the 'club-like' atmosphere of GRx, where collective goals could be pursued with likeminded individuals.

Philippa: ...I'm a bit more happier going swimming. ... I'm looking forward to it actually, at times. (Interview 1)

Frieda: I find it absolutely lovely. It's really lovely, everybody's so nice, and we're all trying to do the same things. We're all trying to better our self aren't we? (Interview 2)

5.5.2 The Role of Green Prescription

The perception of the GRx community group as an enabler to both enjoyable and social exercise participation is clearly demonstrated in the quotations above. The participants clearly believed that their activity level would be lower if they were not attending the programme.

Brian: ... If I never had that programme, I probably wouldn't be doing any exercise at all. Because it keeps me motivated, you know, I like to muck around and to unite with everybody else. It keeps me sane basically, to get out of here. (Interview 2)

Derren: Oh, if I didn't go there I wouldn't do it. That's what it boils down to isn't it? (Interview 2)

Having 'somewhere to go each week' was especially appealing because it provided a routine, got them out of the house and negated the motivational difficulties they encountered when exercising at home.

Brian: It's given me somewhere to go; to do something at home is hard. Its not because you don't really want to, it's just because, you don't get 'round to it. (Interview 2)

Perceptions about the role of the GRx programme in regular physical activity maintenance were divided between the participants; those who were referred before the implementation of the graduation system (designed as a positive transition into independent activity), expressed different views from those who enrolled after. Attendance at the Thursday morning programme had become a 'sacrosanct' part of the weekly routine for participants enrolled prior to the change. Like Frieda, some were adamant they would not stop attending: *I don't ever want to graduate from there. I'm going for as long as I can. (Interview 2)*

The group enrolled prior to the graduation system voiced concerns that graduating would mean they would be ousted from the group.

Betty: We sort of shudder and think well some day they'll tip us out. And that's probably our biggest fear. (Interview 1)

Significant insecurities were expressed about letting their physical activity habits slip when discussing graduation, although most said they would leave if it meant making way for new patients.

Interviewer: What would happen if you weren't able to go [to the GRx programme] anymore?

Betty: I don't know. I don't really know. I don't know. I think we need the support really. It

really is, it keeps you focused, 'cause you say 'well I'm going to do this so I better do it.'
Whereas otherwise you might just think, 'well I'm busy today, I won't do it.' (Interview 1)

Jocelyn: I don't think he'd go to anything else. I mean, it's in his brain now that he goes there on a Thursday. ... It's just in our diary, that, that's what we do. I mean if they get to busy I dare say we might have to step down for the others that come in, but um, mmm.

Interviewer: What would happen then?

Jocelyn: Well that's what worries me, you see. Because it's too easy to let these things slip.

All patients enrolled after implementation of the graduation system had been made aware that GRx was explicitly a short-term starter programme. Some of the interviewees enrolled after this time were making plans for when their GRx expired, suggesting they were anticipating becoming graduates.

Angela: ...That is one goal she [friend also on GRx] said to me, we may finish Green Prescription, well we may have to finish, and she said we'll keep up with our walking, yeah. ... Like, she said, on Thursday we always have been going to exercises, well we'll continue meeting each week and doing that. (Interview 2)

Even for this cohort however, the programme had become a meaningful part of their lives, and some participants, like Philippa, candidly stated they '*don't want to stop coming*'.

Interviewer: yeah. What do you think will happen if you do have to graduate at some point?

Philippa: I'll miss the people. I mean you can go to a gym and that, but, yeah.

Interviewer: Yeah, it's not the same?

Philippa: No it's not, people are all in their, you know, this and that, their get-up and, it's not like the programme. Not that I been to the gym really, but I don't think it's friendly like them lot. ...Yeah. And I don't like that kind of thing. Just to exercise. (Interview 2)

Brian: ... Do I get a job or do I not get a job, 'cause it might take up the Thursday! I think I'd miss that, I really would. 'cause it's only an hour, it's really silly, but it's an hour that I love, you know? I really enjoy it. (Interview 2)

Angela: Well, if I don't graduate I'm not too worried, I'll go back next year.

Interviewer: So you are wanting to graduate?

Angela: No not really. (Interview 2)

Regardless of whether they were enrolled before or after the graduation system, there was a consensus among the group that the GRx community programme was equally valuable for promoting initial exercise uptake *and* for sustaining it. At the second interview, several participants strongly advocated the need for 'something ongoing' otherwise 'you might lose the motivation.' Several of the interviewees suggested the programme could be longer and another group could be formed for patients who graduate 'instead of just saying 'you're at Green Prescription now, after you've graduated, that's it, go and find yourself something to do.'" (Derren, Interview 1)

Fleur: Oh, probably if they maybe could keep it going, like when they say only six months, and then you graduate. ... I mean, I thought, the idea was to keep people active, and it's something they can come to each week? And obviously they want to come. Otherwise they wouldn't be there would they? ... So maybe they should have another, a next progression up or something. ... Then you could just keep going, an ongoing thing. (Interview 2)

Derren: ... I don't know if they've thought it through. You know you get to the end of your time and they say 'oh here you are, there's walking groups here' and that.... relying on them [the patients], whereas they've been sort of sent there to Green Prescription, and they were told this is where you're going to have it. ... I think you'll find if you chat to them, are just starting to enjoy doing what they're doing there, and then you're moved on. (Interview 1)

5.6 Theme 4: Disease Avoidance

Chronic disease was either a risk or a reality for almost all of the participants; managing their conditions, or reducing risk factors such as high blood pressure and excessive body weight, underpinned much of the discussion during the interviews. For the purposes of this thesis, disease avoidance encompasses both management of existing conditions to avoid deterioration, and avoidance of those diseases participants had a high risk of developing.

5.6.1 *Reducing the risk and progression of disease*

Minimising disease progression and reducing the risk of disease onset were central topics discussed during the interviews. In fact, in the majority of cases, it was this 'minimising progression' and 'reducing risks' that initially constituted the reasons for a referral to GRx. This was important regardless of whether participants reported being in good health, or, like Brian, considered themselves to be unwell with little chance of improving.

Brian: ... I gotta try to keep it at a level. They told me I won't, I probably won't improve, but if I'm doing what I am doing it won't get worse. (Interview 2)

James: ...Bones and things don't seem too bad at all at the moment. If I don't get any worse, it'll be great. (Interview 1)

Fleur (discussing her heart attack): ...Yeah I don't want anything else wrong. (Interview 1)

As in Fleur's case, avoidance was especially important for those who had experienced a triggering health event, or when ill health had been observed in others.

Jocelyn: ...I've watched the sugar side of things, because of dad. Always had that horrible fear that I might finish up as a diabetic. Um, and that sort of didn't thrill me. (Interview 1)

Jocelyn ensured she undertook regular screening tests for diabetes, and at both the first and second interviews was proud to declared *'I just about claimed that I was the reverse of a diabetic!'*

At the first interview, Muriel reported coping with her newly diagnosed diabetes by trying to *'get it out of my mind so I don't have to worry about it.'* She expressed some acceptance at the second interview by saying *'I'm getting used to it. It doesn't have any impacts on me, I just, um, know it's there.'* The absence of obvious impacts did however make it difficult to monitor how she was progressing toward her goal of diabetes management: *How can I control my diabetes if I haven't got anything to show that I have got diabetes? You only got, you get told 'you got diabetes' and 'come back in a year's time.'* (Interview 2)

Many participants said they wanted to get their chronic conditions *'under control.'* A small number of participants *hoped* their health would not deteriorate but considered their family history made this inevitable and uncontrollable.

Interviewer: You're not too worried about the possibility of getting diabetes?

Brian: No, um, well, no not really, 'cause Noeline's (wife) whole family's full of it, my whole family's full of it. I think you only get two of us out seven that haven't got it. So, I think if it's going to happen it's going to happen, it's inevitable. ... My dad got it when he was, dad got it at 60 I think, he got diabetes. He had it for the last two years he was alive, but um. I think if you're going to get it, you're going to get it. It doesn't worry me. (Interview 2)

5.6.2 Controlling clinical measures

The importance of controlling clinical indicators of disease was evident in almost all participants for the duration of the study. Almost the entire group reported

striving for improvements in one or more outcomes including blood pressure, cholesterol, glycemic control and weight loss.

Philippa: And if I can get my weight down too it'll help with my blood pressure. (Interview 1)

Angela: ... the next thing will be the blood test for my cholesterol test, which is in a couple of months, that will tell us how well I'm doing. (Interview 1)

Managing diseases and clinical indicators that could not be seen was sometimes a frustrating experience that made them question the benefit of physical activity.

Philippa: I thought, 'bloody hell' you know, 'I'm not losing any weight. My blood pressures going up, instead' down. It's not doing any good.' (Interview 1)

Betty described how she had not undertaken self-management practices until the effects of her condition had become apparent to her: *I was very naughty, I never used to take medication. I'd be given it and I'd never take it. Whereas now I take it.*

Interviewer: What changed?

Betty: Well I was aware that diabetes was getting worse and I wasn't feeling so good. It was because of diabetes was getting on top of me, aches and pains everywhere. (Interview 1)

Some participants spoke of discontinuing various self-management practices (excluding physical activity) when they had reached this point: Philippa hoped she could *'come off these pills'* while others, such as Fleur, had already stopped testing her blood glucose: *'since my blood sugars have come down I haven't bothered now.'* (Interview 2)

Weight loss and weight control were another prominent objective among the group. Physical health was the most common reason, alongside expected benefits such as being *'able to move better'* and longevity for family reasons.

Philippa: ... I just want to lose the weight so I'm better, I'm a lot better and I, it won't be bad on my health. 'cause I got grand-kids coming, another grand-kid coming. I got my grand-kids and I want to be around for them. That's the main thing. (Interview 1)

In contrast, two participants explained how it was unhelpful to pursue health and weight loss as their goals. Daphne believed setting out to lose weight had a detrimental effect upon her behaviour, while Derren thought health was an insufficient motivator.

Daphne: If I think that I'm going to go out and lose weight and get fit, sometimes my mind thinks, 'nah, I can't be bothered today.' So I just tend to don't think, just think of something else and just do the sort of opposite. It's sort of confusing myself. (Interview 1)

Derren: But you've got to have a target, it's not use just doing it for the sake of it. If you say I am going to do it is to have good health, or to be fit and I don't think that's no good, you got to have a target for why you're doing it. (Interview 2)

5.7 Changes in the Understanding of Success between Interviews One and Two

All of the themes presented in this chapter were evident in both sets of interviews, but there were important changes in how the participants described goals and achievements between interviews one and two. Disease avoidance and management were prominent as goals for the future at both the first and second interviews, but participants rarely described these as achievements in the final interview. Achievements relating to functional ability and efforts to establish

physical activity into their routine were also described as future goals *and* were considered to be achievements during the second interviews.

5.7.1 Progress toward Disease Avoidance

At both the first and second interviews, success at a future point in time typically included a component of disease management or avoidance. Past struggles to control clinical measures continued for most of the participants over the course of the study. Mirroring perceptions of success concerning weight loss, the few who had made progress toward, or achieved their desired outcomes, seemed to be dissatisfied.

Angela: ... Well it comes out in your blood tests how well you're doing. He's [doctor] very happy with me. I was a bit annoyed at myself, it [cholesterol] had gone up 4 points. He told me not to worry. Instead of being 3.2 last time, it was 3.6. (Interview 1)

Achieving a weight loss goal was described as a particularly '*hard one*' and a large proportion of the participants said they were dissatisfied regardless of whether they had lost, gained or maintained their weight. A comparison of Muriel's statements in the first and second interviews illustrates this point well: *My goal is to be able to see myself, even in about 5 months, that I've lost some weight. I don't care how much I lose. (Interview 1)*

By the time the second interview came around she had made some progress: ... *I lost 5 kg's. ...they're [doctor and dietician] quite happy with that but I'm not. (Interview 2)*

Muriel was not the only participant to report that weight loss in particular remained an important goal for the future.

Brian: ... I still can't get round my gut.

Interviewer: You've been trying to lose weight?

Brian: I've been trying to, but uh, it might help with Noeline [wife] getting her diabetes and that, you got to have a strict carbohydrate diet and stuff, so what she has, I have I guess.

Interviewer: And have you lost any weight so far?

Brian: I don't know, don't think so. I'd like to. (Interview 2)

*Frieda: ...And I have put on weight. ... But if I start progressing more now, I'll lose it.
(Interview 2)*

There were exceptions to the experience of dissatisfaction with disease and weight loss outcomes at the five month interview:

Fleur: -yeah, I've had a good report from my doctor. I'm taking pills for my blood pressure. He was talking about that, I can probably come off one of them next time, 'cause it was 120/70. Doesn't want it too much lower.

Interviewer: Yeah, that's good.

Fleur: Yeah. And I've come off one of (the) diabetic pills. So that's really good. I'm really happy, 'cause my blood sugar is back to normal. Yeah, so I'm really happy. And I've lost some weight. So, he's really pleased. (Interview 2)

Fleur expressed possibly the highest level of satisfaction with her progress but interestingly, had not expressed the desire to achieve these outcomes at the first interview, and even said she had not been directly pursuing these as goals:

Interviewer: Were you intentionally trying to lose weight?

Fleur: No, well, I wanted to lose a little bit, yeah, but because of the diabetes I was probably more conscious of what I was eating. And reading the [food] labels more. (Interview 2)

5.7.2 Experiences of Achievement

At the second interview, the participants' goals relating to their fitness goals or functional ability were described as achievements in their activities of daily living or in regards to specific exercises. Participants who had previously stated or written fitness goals described their achievements in terms of functional improvements and specific exercises in which they had progressed. They explained how increases in their strength, mobility or energy level benefited them in everyday life.

Suzie: I find actually since I've been doing that exercises, that I'm not tripping over things as much I used to. I was starting to trip over things quite a bit, and now I don't think I am 'cause I'm just getting that much stronger. (Interview 2)

Angela: ...Well, I was talking about it to my husband the other day and um, I was climbing up and down ladders on Sunday, taking the curtains down and putting them up and things, and I found, I said 'there's no way I could have done this last year.' And I cleaned the house on Monday and washed all the curtains in here. Yeah, was fine. And went swimming that night..... How's that?! That's pretty good. And then on Sunday I did all the curtains and ironing and all sorts of things. So, no, I think I'm doing well. (Interview 2)

James had aimed to improve his fitness, but he also expressed some concerns about how this translated into goal setting: *...Lot of things you sort of do automatically to make things easier, but it's hard to put into words. People speaking 'well what's your goal?' Well it's a bit hard to say, 'oh, my goal is to keep on improving.' (Interview 2)*

Nevertheless, in the same interview he reported that *'exercises that were hard before are now easier'*. When asked what he meant by *'easier'*, James responded by saying: *'greater range of movement, I don't get puffed.'*

Having achieved improvements in their functional ability meant they could now go about various activities without worrying about whether they were physically capable or not.

Philippa: ... I couldn't get around before. Now I don't really think about it, I just get out and go. And my daughter knows now, before she'd say 'right what do you want?' and I'd have to say 'No. No. I'm going to get it.' But they're all used to it now I think. (Interview 2)

Derren: ... If we're going somewhere, if we're going into town, or say 'oh we'll go get the bus', we don't worry about what distance we're going to have to walk, 'cause it's not like the car, you can go and park and then walk all round town. I think if you decide you're going to do something you do it, you know you're going to do it. (Interview 2)

Overall, in the second interviews, participants were happy to have improved, maintained or not declined significantly in their functional ability. Some, like 80 year old Stephanie believed that *'you are going down when you're getting older...you don't get any fitter.'* But like other older participants who had hoped to minimise functional loss, Stephanie reported being satisfied with her progress because she had not declined significantly: *I haven't improved that much, but I am quite happy to stay at that level. (Interview 2)*

The desire to incorporate physical activity into their weekly routine was apparent at both interviews, but their efforts to achieve this were described as specific behavioural achievements at the second interview. They tended to characterise this success in terms of improvements in physical fitness, functional ability and specific exercise pursuits rather than clinical changes. Regardless of the direction of change concerning disease oriented goals, *all* participants agreed they had been successful at either maintaining or improving their physical activity over the study period. Most offered short affirmative responses when asked if they felt they had been

successful over the preceding five months; Muriel was one of the few to elaborate upon what success meant for her: *Yeah. I think I have [been successful]. I've achieved, stopped eating half of the food that I used to eat. Um, my health and exercise is doing better. I can achieve things now that I never used to. It sort of makes me more happier, more cheerful. (Interview 2)*

Despite her goals of weight loss and diabetes control, Muriel characterised success by the changes in her eating and exercise behaviour, as well as reporting an improvement in her mood and general sense of wellbeing. There was a tendency for disease and weight loss goals to be described in most of the first interviews, but like disease outcomes, these were seldom reported as achievements in retrospect. During this final interview, the interviewees' accounts of what had occurred over the five months concerned the immediate impacts on their lives, not clinical measures. Philippa for instance, explained the subjective improvement in her health by detailing the benefits that she had been noticing: *My health's better I think, there's less pain anyway, less pain in my joints when I'm walking and doing things. Not no pain, but less pain. So that's why I can do things. I can get up and stand here and do things round the kitchen and the house. Help my husband out with, when, if he asks me to do something, I can do it, I can help. (Interview 2)*

Even participants such as Frieda, who said their health management was 'going backwards instead of forwards' said they had made accomplishments during the study period: *I think it was an achievement when I could go so long on the stepping, you know the step [exercise machine], we've got there on Thursday? Because my legs used to go, I used to go flat out on it, then I went slower, and I achieved going longer on it. (Interview 2)*

5.7.4 Feedback from Significant Others

At the second interview, when participants were asked what significant others thought about their physical activity and health, they described three main sources

of feedback: feedback from doctors, family and friends, and GRx staff. Many said their doctors were '*pleased*' with their health management but discussion about their activity level, or attendance at the GRx programme, was not discussed often and then not in any depth. Betty even said her doctor '*just passes it by*', and like other participants had noted at the first interview, she also '*got the feeling he was too busy*.' Friends and family had given general compliments that they were '*looking well*', but as Derren pointed out, '*nobody tells you you're looking horrible*'. The most specific feedback relating to their physical activity had come from staff members at the Christchurch GRx programme. A number of the interviewees reported being encouraged to increase their activity or praised for pushing themselves and putting in effort when performing exercises at the programme.

Betty: ...[GRx staff member] will sometimes say, 'oh you did well today', or something like that, or 'you've worked hard' or something. You don't think they're looking but they must be. (Interview 2)

Frieda: They've explained that when you, when you come to the stage, like with my legs, walking, and you feel as though you couldn't go any longer, just see if you can walk another minute. And that's it. They can push you, to do just a little more. And [GRx staff member] says, 'now just do that little bit extra.' (Interview 2)

Being urged by the staff to work harder was appreciated by most because, like Brian, many of the group said '*you gotta be pushed*'. Brian, an especially strong proponent of the programme staff's approach, drew comparisons with the GRx phone support he had received in the past, saying '*it was good to hear from them. But they sort of didn't really push you as much*.' Muriel however, felt there was a fine line between a motivational push and being pressured: *...they push me. And I did move, I did go a bit faster on the bike. Um, but when they keep at you, I don't like people keeping at me. I like to have a push, when they say 'right, now do this and then go.' I'll do it. But when they're there, waiting, watching, I don't seem to be able to do it. (Interview 2)*

5.8 Conclusion

This chapter presented the various ways the participants conceptualise success in regards of their physical activity and health. It has also detailed how these perceptions changed over the course of the study period. In the next chapter, changes in the four overlapping themes of functional ability, physical fitness achievements, embedding an active lifestyle and disease avoidance are explored in more detail by drawing comparisons and contrasts with other research and theoretical models.

Chapter Six: Discussion

6.1 Introduction

The previous chapter detailed how the research participants perceived success. Specifically, it analysed the way in which increasing or maintaining functional ability, achieving physical fitness goals, embedding an active lifestyle and avoiding disease constituted the foundations upon which levels of success came to be evaluated. Each of the above interrelated factors has been identified in other research as an important issue in physical activity participation. Therefore, discussion in this chapter focuses upon literature and behavioural theories that highlight the significance of these factors and the relevance of the changes that occurred over the study period. The first point of discussion centres upon the significance of disease avoidance and the importance of maintaining/increasing functional ability (and simultaneously details how these two factors interact with each other). Secondly, experiences of achievement are explored within the context of a theoretical paradigm. The next section examines the influence of barriers, enablers and the GRx programme upon the decision to embed an active lifestyle. Finally, this chapter considers the potential impact that these findings could exercise upon existing strategies used to promote the uptake of physical activity among those groups most at risk of chronic health conditions.

6.2 Significance of the Participants' Understandings of Success

The practice of setting goals to improve chronic illness and functional status is not a new initiative, and has been previously identified as important factors for patient groups and older adults (Cousins, 2003a; Hardcastle et al., 2005; Heisler et al., 2003b; Morrow et al., 2008; Riddoch et al., 1998). The extent to which participants were prepared to undertake physical activity depended upon perceptions of how this would affect their functional ability. Furthermore, the participants considered

how such activity would help them attain their life goals, such as longevity and spending time with family.

6.2.1 Significance of Disease Avoidance

The literature review argued that the professional perspective upon success in relation to physical activity and health is an objective and medicalized one. Professionals believe that regular physical activity is necessary to reduce the incidence and impact of chronic disease, whereas patients also have other priorities. However, both patient and professional understandings of success do relate to public health objectives: they both involve a level of physical activity that is sufficient to reduce the risk and impact of chronic disease. Professional discourse advocates that a reduced burden upon the public health system (and its associated expenditure) will be realized with greater physical activity participation. Conversely, patients tend to hold a short-term view that reflects a desire for immediate positive impacts upon their lives and emphasis subjective wellbeing. It may also be that these factors are also of significance in alleviating the burden of mental illness in the population.

The risk or diagnosis of disease has been reported as an initial motivator of physical activity uptake (Elley, 2007; Kearney et al., 2003) and is predicted by protection motivation theory. Patients reported that it was predominantly the threat of disease that had raised awareness of the need to be more physically active. Most of the participants had been referred to the GRx programme for health reasons. Given the importance patients give to their doctor's advice (Long et al., 1996; Tulloch et al., 2006), it is possible disease oriented goals were influenced by the experience of being prescribed exercise by their GP. Although the participants' motives for beginning an exercise programme can be considered health/disease related, participation motives are generally not considered to be important factors in maintaining regular activity (Rothman et al., 2004).

Although disease avoidance and increasing or maintaining physical function were described by the group as separate goals in their own right, in practice the threat of disease was closely linked to fears about deterioration in functional ability.

Participants' reports of engaging in health behaviours only when the effects of disease were impacting upon their everyday life, and/or because they had observed disability in significant others with chronic illness, accords with the literature on patient perspectives in type 2 diabetes management (Huang et al., 2005; Morrow et al., 2008). Physical impairments due to disease or ageing processes posed barriers or potential barriers to quality of life, whereas health and physical activity were seen as enablers. Like active GRx patients in Pringle's (2008) study, the majority of the group held positive beliefs about physical activity and themselves, and generally believed they had a good quality of life that was worth maintaining. For GRx patients in this study, the risk of disability due to chronic disease posed a threat to the achievement of their life goals, (such as fulfilling family responsibilities and maintaining positive self-concepts). This finding supports Morrow et al.'s (2008) view that for some patients, health goals and self-management practices only become important when disease is perceived as a barrier to achieving life goals.

Weight loss was an outcome desired by a large number of the participants and has been reported in other studies, including those of GRx patients (Elley, 2007; Pringle, 2008). Participants in this study often described the benefits of weight loss in terms of increasing their mobility; losing weight meant they would be able to walk with greater ease and carry out activities of daily living with greater ease. While they did not report physical appearance as a reason for exercise participation, reports of embarrassment from being overweight suggest that similar motives may have been present. Research into weight loss has shown that failure to lose weight, or weight gain, results in feelings of failure and incompetence and lowers self-efficacy, as well as contributing to low self-esteem and depression (Reed et al., 1999b; SIGN, 1996).

6.2.2 Significance of Functional Capability

Participants described the most important achievement as being able to complete everyday activities. Continuing to engage independently in everyday activities, and fulfilling expected roles within the family, are important elements for quality of life and perceived well-being. This desire for independence is believed to be driven by a deep-seated human need to feel useful and valued (Lowe, 2007; Moore et al., 2006; Scanlon-Mogel et al., 2004). Unlike participants in other studies who highlight the need to *receive* support and help, this group expressed their desire to continue being the ones *providing* support for family members (Elley, 2007; Lowe, 2007; Moore et al., 2006). One participant even described reducing her reliance upon family members as one of her achievements. Being unable to uphold family responsibilities (and the prospect of becoming a burden upon the family) was prominent in their fears and understandings of failure. Given the age of the participants, it is not surprising that one of their key goals concerned maintaining quality of life for as long as possible. Quite apart from disease avoidance, improvements or minimisation of decline in functional ability were recognised (retrospectively) as achievements, particularly for those participants who were older and/or had physical limitations. The group described gaining a sense of achievement, self-efficacy and pride through achievements that demonstrated their independence and physical ability. This group believed physical activity had minimised anxiety about their capability to engage in everyday activities, whereas other studies have found physical activity can increase anxiety about falls or cardiovascular events (Robertson et al., 2002).

6.2.3 Beliefs about Illness and Ageing

This study supports previous research that the participants' decision to be physically active was fuelled by their desire to avoid negative societal and self-stereotypes (Lowe, 2007b). Negative perceptions about being ill, old, on medication

and functionally impaired had been constructed from their own past experiences and from observation of others' experiences of illness or ageing, especially parents or grandparents. Participants described how they hoped to avoid these undesirable circumstances for themselves. Conversely, their observations of good health and physical function in older people who they perceived as fit and independent had aroused aspirations for their own future. The group considered it an achievement that these individuals had aged well, and, crucially, they saw the physical health of these role models to be a consequence of keeping active. Similarly, Huang et al. (2005) also found that observations of illness in others had influenced the self-management practices for type 2 diabetes patients.

Physical decline was generally seen as a downhill progression: if they failed to maintain their physical capability it would be extremely difficult, if not impossible, to regain it. Many of the participants who endorsed negative stereotypes attempted to resist these outcomes through a physically active lifestyle: the 'use it or lose it' philosophy they described has also been found in other research with active older adults (Diongi, 2006; Lowe, 2007; Scanlon-Mogel et al., 2004).

The participants' contradictory perceptions about their health status are similar to those of other exercising adults (Diongi, 2006; Gano-Overway, 2004; Lowe, 2007). Participants in this research viewed themselves as generally healthy and fit, while at the same time recognizing that they were ageing, overweight, and/or had multiple co-morbidities. Also, like the master athletes, the interviewees compared themselves favourably with others of a similar age. This over-optimistic view of perceived health and comparison with others has been found to have a beneficial effect on physical and mental health (Lowe, 2007; Scanlon-Mogel et al., 2004). An active lifestyle and physical fitness achievements provided ways for participants to physically and psychologically distance themselves from societal and self-stereotypes, like those participants in Diongi's (2006) study of master athletes. One example of how the group challenged such stereotypes was by renegotiating

perceptions of age-appropriate pursuits. To this end, they aimed to complete the City to Surf event in under two hours at the age of seventy. Even the youngest participant described challenging negative self-beliefs through pursuing activities such as hill climbing, and subsequently reported engaging in positive affirmations rather than the self-deprecating talk described at the first interview.

6.2.4 The Influence of Others on Understandings of Success

Many patients believed that they had received a referral to the GRx programme in order to reduce, or to avoid the risk of developing a chronic disease. It is therefore unsurprising that patients also viewed success in terms of disease avoidance or reduction. However, with a few exceptions, the participants' expectations of their GPs did not play a major role in on-going physical activity. Time pressures and infrequency of contact between doctor and patient necessarily limit a discussion of lifestyle factors. Therefore, the comparatively minor role of the GP is not wholly unexpected.. Nonetheless, they were pleased when their doctors did express an interest in their physical activity and attendance at the programme, even if it was just to ask if they were still going or telling them to keep up the good work.

Spousal support was considered important for maintaining regular activity, but support and feedback from family and friends played a lesser role in supporting physical activity than suggested by other research (Lowe, 2007; Pringle, 2008). Most of this feedback related to changes in physical appearance, significantly, such improvement was articulated by the participants as a *benefit* of exercise participation rather than an *achievement*.

Facilitating change relies on providing experiences of "instruction, modeling and planned actions with goals, corrective feedback and problem solving" (Bandura, 1997). The greatest external influence upon participants was the feedback received from the GRx staff. Reports of praise acknowledging physical fitness achievements

provided immediate positive reinforcement, similar to athletes' experiences of success when they believed coaches and peers were pleased with their performance (Gilson et al., 2008). While praise is typically considered an extrinsic factor, praise that is geared toward effort and the exercise itself may enhance the intrinsic sense of achievement experienced at other times.

6.3 Embedding an Active Lifestyle

6.3.1 Embedding an Active Identity: Benefits, Barriers and Enablers

Regardless of their initial intentions to increase or maintain their activity level, all interviewees reported numerous observable benefits and enjoyment of physical activity, especially at the GRx programme. In general, these improvements were not unexpected, as the interviewees had discussed exercise benefits at the start of the study. These benefits were based upon what they had learnt through attending the GRx programme or through their own general knowledge. All of the participants reported experiencing a range of improvements in mobility, strength, energy, fitness, balance, mood and pain. In addition, they experienced benefits relating to specific medical conditions, general wellbeing and social interaction.

Overall, the GRx programme was perceived to promote a positive and supportive environment. Participants saw their attendance at the group as a social outing, a view reflected in their perceptions of it as a kind of health club. Assisting patients in forming positive behavioural habits (such as participating in an increased level of physical activity) involves increasing enablers and reducing the barriers. Like the active participants in Pringle's (2008) and Elley's (2007) studies, this group explained how the support of the GRx programme had helped them increase their activity levels. This group also believed the programme to be essential in guaranteeing the maintenance of regular physical activity. These psycho-social factors modified by attendance at the programme could potentially be maintained at the end of the intervention time. Environmental barriers such as cost and access

issues are temporarily reduced by the programme they are unlikely to change in the long run. Consequently, the likelihood of relapse when participants exit the programme is high; many of them were anxiously aware of this prospect. This finding strongly indicates the need for ongoing support in referral programmes, but conflicts with the need for cost-effective interventions that result in sustained behaviour change. Kearney et al. (2003) suggest that, contrary to the stages of change model, the risk of relapse is on-going, as indicated by the decline in activity level after the cessation of physical activity interventions indicated in other research (Morgan, 2004).

All of the barriers and enablers described by the group have been reported by other patients in the GRx programme (Elley, 2007; Elley et al., 2003; Pringle, 2008; SPARCa, 2007), participants of other exercise referral programmes, and other exercising adults (Cousins, 2003a; Riddoch et al., 1998; Rogers et al., 2008; Scanlon-Mogel et al., 2004; SPARC, 2002). Motivation was described as one of the major barriers, especially in regard to exercising at home or without the support of the programme. Perceptions in the group were similar to those of health practitioners and intervention staff about patients involved in United Kingdom exercise referral programmes (Riddoch et al., 1998) Having somewhere to go, getting out of the house and social engagement were some of the most important factors for ongoing physical activity participation.

6.3.2 Gaining a Sense of Achievement and Forming an Active Identity

Participants described experiences such as climbing flights of stairs with greater ease, or being able to exercise for longer, as achievements - even if they thought their overall health status had worsened over the study period. The descriptions that participants gave of their achievements can be aligned with evidence that has identified effective goals as being behaviourally oriented, slightly difficult yet

achievable, and congruent with personal goals and values (Austin et al., 1996; Shilts et al., 2004).

GRx patients in other studies, as well as other adults who exercise for leisure, report gaining a sense of achievement, pride and control as they exercise, but most of the attention in the literature has been given to goals and outcomes that are distant consequences of the behaviour (Elley, 2007; Hardcastle et al., 2005; Pringle, 2008). The participants experiences during or immediately after exercise were much like those of the strength training athletes who described experiencing success when they accomplished a task in training and felt they had put in maximum effort (Gilson et al., 2008).

According to goal achievement theory²¹, success is defined by some individual's as arising from effort, hard work, overcoming challenges and self-improvement. Known as the growth orientation, participants in this study aligned most closely with this theoretical construct. Growth orientation theory also predicts the adaptive response patterns observed when these participants encountered difficulties or failure in their physical activity pursuits and functional capabilities. Participants viewed functional difficulties as feedback upon their progress and revised their goals and strategies accordingly. Although some authors suggest a tendency toward growth orientation increases with age (Rogers et al., 2008), the influence of praise from GRx staff members could have promoted or reinforced this way of thinking.

Several possible reasons may explain why these achievements were significant to the group. While they could have reflected a way to monitor or to work upon disease oriented goals, few participants had good disease management or expressed satisfaction with progress made in this area. Instead, their achievements reflected progress in functional improvement and life goals. These findings are

²¹ *Goal achievement theory* and goal orientations are described in Chapter 3.5.4

similar to the goals of patients with type 2 diabetes, and views of older adults upon ageing well and having a sense of meaning and purpose in life (Diongi, 2006; Huang et al., 2005; Lowe, 2007; Moore et al., 2006; Morrow et al., 2008).

Regardless of whether physical activity was a lifelong habit or a more recent development, all of the participants expressed considerable pride about living an active lifestyle. Specific accomplishments, such as getting on a bicycle for the first time in ten years, were described as generating a sense of achievement, control and confidence, whereas clinical outcomes and weight loss did not seem to have the same effect. These positive experiences encouraged the participants to continue being active, demonstrating how psychological success²² may shape behaviour.

The participants' descriptions suggested the existence of a positive or 'active identity'²³, similar to that proposed in other research (Hardcastle et al., 2005; Kearney et al., 2003). Hardcastle et al.'s (2005) study of changes in self-concept during participation in a group exercise were similar to the group of GRx patients in this study. Both groups of research participants prioritised physical activity in their weekly routines and had overcome various environmental and physical barriers to exercise participation. As Hardcastle et al.'s (2005) and Kearney et al.'s (2003) work in health behaviour indicates, the experience of achievement and/or psychological success coincides with changes in self-concepts relating to health behaviours, and may therefore be a prerequisite of long-term behaviour change²⁴.

²² *Psychological success* is defined and distinguished from *objective success* in Chapter 3.6.1

²³ *Identity* and *self-concepts* relating to physical activity are described in Chapter 3.6.2

²⁴ The role of achievement and self-concept in behaviour change is described in Chapter 3.6.2

6.3.3 Why Disease Avoidance May Not be Considered Achievements

Clinical indicators provide objective evidence of goal progression, but in this study, participants did not articulate these changes as achievements. There are several reasons that suggest why progress toward disease avoidance was not reported as an achievement.

The first possible explanation is simply linguistic: the term ‘achievement’ may be more likely to elicit a response regarding behavioural experiences rather than outcomes of behaviour. Other explanations relate to the nature of disease avoidance and clinical measures. Patients in numerous intervention trials have demonstrated considerable difficulty in modifying clinical measures (Morgan, 2004), and this group of participants proved no different. Research in disease management suggests that it is the immediate impacts that are of most concern to patients (Huang et al., 2005), more so than the risk of ill health (Plotnikoff et al., 2002a). Accordingly, improvements in clinical measures could have been overshadowed by the readily observable benefits²⁵ of exercise in everyday life, such as increased energy, improved mood and less breathlessness. Because many clinical indicators like blood glucose or blood pressure are not directly apparent, participants found them difficult to conceptualise, which in turn made it harder to monitor their own progress. Misconceptions about health conditions or clinical measures may also have affected how well they thought they were progressing in this area.

Considering the importance the group gave to reducing the threat of disease, it is reasonable that clinical improvements should have constituted an achievement. As the literature states, goals focused upon physiological outcomes are associated with poorer goal achievement and satisfaction compared to goals focused upon

²⁵ *Observable benefits* concern factors that can be perceived by the patient. These can include exercise-mediated improvements in strength, balance, flexibility and improved joint function that can reduce pain, improve functional ability and help prevent injuries. Other direct benefits include improved energy, sleep, cognitive function, mental wellbeing, self-esteem and physical appearance, such as weight loss.

behaviours (Austin et al., 1996; Nothwehr et al., 2007). Improving clinical measures of disease and disease risk are distant outcomes that generally rely upon delayed feedback from medical testing. Taking into account the principles of operant conditioning,²⁶ the time required for physiological changes to occur, in addition to waiting for test results, is too disconnected in time from the behaviour itself to effectively reinforce physical activity participation. Moreover, losing sight of distant goals can easily occur, while the threat of disease is something most people wish to avoid rather than focus on (Plotnikoff et al., 2002a).

Research shows that goals focused on avoidance²⁷ are negatively associated with perceptions about goal progress, self-esteem and feelings of competence (Elliot et al., 1997). Similarly, the findings of this study indicate that goals of avoiding illness or disability are less likely to generate a sense of achievement when compared with goals that involve approaching a desirable state, such as improved health and functionality. The risk of disease and disability remained an intangible future possibility for this group, whereas progress was directly apparent in their fitness accomplishments and activities of everyday living.

6.3.4 Why Disease Oriented Goals May be Harmful

Disease threat alone does not appear to be an important factor in on-going participation in physical activity, as protection motivation theory predicts it should. (Plotnikoff et al., 2002a). Considering the small improvements that have been demonstrated in clinical indicators, individuals continue to be at significant risk of morbidity and early mortality (Winett et al., 2005). Nonetheless, increased physical activity has been shown to reduce the risk of adverse health outcomes independent of changes in clinical indicators or body weight (Blair et al., 1996; Blair et al., 2006a; Campos et al., 2006a; Campos et al., 2006b; Reed et al., 1999b; Sargent et al., 2000),

²⁶ *Operant conditioning* is described in Chapter 3.5.3

²⁷ *Approach and avoid goals* are described in Chapter 3.5.1

so there appears to be little value in focusing upon clinical measures as an indicator of success.

Plotnikoff et al. (2002) propose that goals centring upon disease reduction have the potential to cause harm by promoting maladaptive responses such as avoidance and denial, which was experienced by some participants in this study, notably those with type 2 diabetes and/or obesity. Two of the participants in this study believed that setting out to exercise for health reasons or to lose weight, was an insufficient motivator and could, paradoxically, have a negative effect upon their behaviour. Maladaptive practices often related to eating behaviours (i.e. overeating or eating sugary foods that were considered off-limits), but as one participant described, feeling out of control with their diet triggered a cascade of negative thoughts, lowered motivation and resulted in a subsequent reduction in physical activity participation.

Individuals are thought to be motivated to enhance self-concept through their thoughts and behaviours, while also tending to avoid experiences or cognitions that threaten it (Kearney et al., 2003). Because disease avoidance and weight loss can promote feelings of failure, low self-esteem and low self-efficacy (Reed et al., 1999a), these types of goals may ingrain negative self-concepts about illness, ageing or body image. Patients may seek to avoid behaviours such as physical activity that precipitate these negative feelings. Disease avoidance and weight loss are long-term outcomes that make less suitable goals for physical activity promotion: they cannot be used effectively to reinforce changes in activity level since they are not behaviours to be modified. An important aspect of encouraging behaviour change involves increasing the perceived value of the desired behaviour. However, the value patients give to the behaviour depends upon whether “the initial expectations about outcomes are realistic” (Rothman et al., 2004; Winett et al., 2005). Considering that disease risk factors and outcomes are generally chronic features in

a patient's life, it is more appropriate to address the behavioural determinants of the problem rather than focusing on the problem itself (Winett et al., 2005).

6.5 Framing Physical Activity Goals

Refining the strategies used during patient consultations in programmes such as GRx has the potential to improve the health of primary care patient at the community level. At the individual level, refining goal setting and monitoring strategies is one route to improving the effectiveness of this popular programme. Maximising the effectiveness of these strategies is particularly important now, as the recent decision to expand the programme is accompanied by the aim to get as many as 50, 000 adult patients referred to GRx by the year 2010 (Forbes, 2008).

Patients are aware of the need to manage their chronic conditions, but their priorities appear to differ from the outcomes that interventions like GRx are expected to achieve. Randal et al. (2008) state that 'true' patient-centred goals are those which achieve the patient's desired outcomes, not the outcomes that health practitioners consider to be in their best interests. The challenge for physical activity promoters is that determining meaningful goals is not merely a matter of asking a patient to outline their goals. r. Many participants believed that goal setting is a strategy exclusive to competitive athletes, a view that may adversely affect their willingness to set goals concerning their physical activity. Those who did set goals tended to focus upon outcomes such as weight loss, general fitness and disease management; interestingly, they do not align with research on the most effective goals. During the interviews, however, the group expressed goals in terms of functional activities, much like patients in the studies of Morrow et al. (2008), Huang et al. (2005) and Randal et al. (2000).

The participants' difficulty in identifying specific, measurable and time limited goals underscores the challenge of helping patients set effective goals. The strategy

of goal setting should focus upon skilful questioning which elicits specific behaviours or functional outcomes desired by patients. During the first interviews, descriptions of desired outcomes were readily elicited by asking participants to imagine what they wanted to be different in five months time, a cognitive strategy also endorsed by Randal et al. (2000). Asking participants to describe what physical activities they would do over an 'ideal week', and how they would know if their fitness had improved, also proved useful.

6.5 Study Limitations and Strengths

The findings of this study are subject to a number of limitations and strengths in the research design, data collection and analysis procedures. Some intervention effects are unavoidable, and although this could potentially have been mitigated through interviewer training, the same depth of information may not have been generated from the interviews. Many of the questions were similar to those used in behavioural counselling and goal setting strategies, and this could have influenced the participants' physical activity behaviour.

A qualitative longitudinal approach in this study enabled exploration of the topic from a temporal perspective, which gave insights into changes over time that have previously not been researched in any depth. Aside from the one participant who was excluded for not meeting the eligibility criteria, the retention rate was 100%. Multiple interviews allowed greater rapport to be established with the research participants, and this may have encouraged them to share their experiences and beliefs more openly. A longitudinal design enabled exploration of how the participants conceptualise success in the future and in retrospect, as well as how success is experienced during participation in a physical activity intervention. This approach acknowledges the context of time and place (Anaf et al., 2007) and recognises that attitudes, beliefs, goals and motivations of the participants are not static and consistent over time (Carter et al., 2007).

To study understandings of success as patients attempted to modify their behaviour, the eligibility criterion was originally limited to participants who had recently enrolled in the programme. However, few patients in the Christchurch programme had recently enrolled and only four of these volunteered to participate in this research. Given that most participants were in the maintenance phase of behaviour modification, the changes in the understandings of success that occurred over time may not reflect the same dynamics that occur during initial attempts to increase physical activity. The views expressed by the four recent enrolments were similar to those who had previously modified their behaviour.

The sample of participants may not fully reflect the perspectives of all GRx patients in New Zealand and those in similar programmes overseas. As the community programme was the focus of this study, the group characteristics may differ from other modes of delivery, such as phone support and one-on-one consultations. The group members were socio-economically diverse, but females and older adults were overrepresented. Maori and Pacific perspectives are lacking from this research, but the overrepresentation of New Zealand European ethnicity is representative of the Christchurch group programme. While the findings are limited to this sample of participants, the participants' perspectives do make it easier to understand the views of similar groups, and the findings are strengthened by other research completed in the area of physical activity, chronic disease management and ageing.

The data analysed in this study was collected solely by the researcher, but the reliability of the findings may be enhanced by confirming the findings with multiple researchers (Mays et al., 1995). However, the themes that emerged were triangulated between the two sets of interviews and the information recorded on patient enrolment forms. Rigour and credibility has been achieved through a comprehensive and reflexive account of the data collection and analysis. Explicit

acknowledgement of the researcher's subjectivity and research philosophy recognizes that multiple interpretations of the data are possible. The inclusion of reflexivity and data excerpts in the results section allow readers to make their own assessment.

Chapter Seven: Conclusion and Recommendations

7.1 Conclusion

Understanding success (in terms of physical activity and health) from the perspective of patients attending the GRx programme was explored through qualitative inquiry over a five month period. The four themes of (you need a verb) functional ability, increasing physical fitness achievements, embedding an active lifestyle and disease avoidance remained consistent throughout the study period, but important changes were observed between interviews one and two. Disease avoidance was an important goal for participants at the first interviews, but did not contribute to any sense of achievement in the second interviews. Patients were more concerned with achievements relating to independent living, fulfilling family roles and self-concepts.

The findings of this study contribute to the growing body of evidence suggesting that framing health behaviour changes around short-term functional and psycho-social goals would enhance physical activity promotion at the individual level (Hardcastle et al., 2005; Kearney et al., 2003; Plotnikoff et al., 2003; Plotnikoff et al., 2002b; Riddoch et al., 1998). Achieving success from both a patient and public health perspective can be facilitated by framing appropriate goals that focus upon behaviours and functional outcomes. Promoting sustained physical activity can be encouraged by creating experiences that lead to a sense of achievement during or immediately after the behaviour itself (Winett et al., 2005): “goals that are attainable, even if far from the ideal, will foster a sense of success, competence and engagement that can drive greater improvement as the goals are advanced” (Wolpert et al., 2001 p. 996). Promoting clinical measures and weight loss as goals when significant change is unrealistic and unsustainable also creates expectations that are unlikely be realised in a short-term intervention like GRx (Robinson, 1997; Winett et al., 2005).

Findings in this research support the view that behavioural repertoires associated with physical activity can become integrated with an individual's identity and that these changes are mediated by gaining a sense of achievement (Hall et al., 1977; Hall et al., 2005; Hardcastle et al., 2005b; Kearney et al., 2003). Longitudinal research similar to this study design may clarify how a sense of achievement can be generated in participants attempting to increase their activity level, and how it interacts with self-concept, behaviour, self-efficacy beliefs and intrinsic enjoyment.

7.2 Recommendations

Established methods of improving long-term adherence to lifestyle change involve increasing enablers, reducing barriers and using a range of cognitive-behavioural strategies. This research supports the use of existing strategies including individualised approaches, role modelling, goal setting, feedback provision and self-monitoring. In addition, the following recommendations can enhance existing strategies and intervention approaches.

1. Framing behaviour change: Physical activity undertaken for the benefit of one's health should be framed in terms of observable physical and psychosocial benefits rather than evaluated by clinical measures. This recommendation applies especially to the GRx programme staff and primary care practitioners. Benefits noted by this group of participants included getting out of the house, having somewhere to go, being in a supportive environment among others with similar goals, having increased energy, a greater range of movement, greater functional independence, an improved sense of wellbeing, and improved mood. Specific physical activity behaviours and on-going participation should be the focus of goals. Clinical endpoints and weight loss should be avoided as goals, and reframed as potential long-term benefits of physical activity. Motivational interviewing techniques should emphasise the observable benefits in patients' everyday lives, as this would

help resolve ambivalence about taking up and maintaining regular physical activity.

2. Goal setting strategies: During patient consultations conducted by the GRx programme staff, additional attention should be given when assisting patients in setting and revising appropriate goals, and establishing suitable measures of their progress. A range of prompts and cognitive strategies, such as those mentioned in Chapter 6.5.3, can be used to facilitate this process. Goals should be focused around functional and fitness outcomes desired by patients, be slightly challenging and encourage experiences of achievement. Professional development for the GRx programme staff can be enhanced by the provision of more in-depth information and training about goal setting as a strategy.

3. Feedback provision: Feedback from both the GRx staff and primary care staff should be oriented toward specific behaviours. , For example, they should focus upon the effort patients demonstrate, challenges they overcome and the gradual improvements they make. Feedback should aim to generate a sense of achievement as soon as possible following attempts to increase their physical activity level. Brief, regular encouragement should be provided by GPs to support continued participation in the exercise regime.

4. Self-monitoring: Self-monitoring of physical activity participation and progress should be encouraged in the GRx programme to a greater extent. The measures used to track progress will depend upon individual circumstances and preferences, but should be framed around fitness, functional ability and making activity a regular habit. Self-monitoring charts are already provided, but compliance could be enhanced by reviewing completed charts with patients during follow-up consultations. This information can then be used to review goals, and as a focal point for behavioural reinforcement.

5. Wider physical activity participation: Patients attending the GRx programme should receive greater encouragement to participate in other physical activities in the community, and to engage with other group members outside of the programme time. This will serve to encourage a higher activity level and to reduce patients' perceived reliance on the GRx programme. From the time of initial referral, it is also important to clarify that the programme is short-term and that the aim is to facilitate involvement in activities occurring in the wider community.

6. Expanding the community-based mode of delivery: The community-based programme reduces many of the barriers to physical activity that are facing patients who are referred to GRx. This mode of delivery should be expanded to increase accessibility by running an additional programme/ that, ideally, occurs in different geographical areas and are available on different days of the week.

7. Long-term support in referral interventions: On-going support needs to be provided for patients referred to interventions, although implementation of this recommendation is ultimately limited by the resources available. Extending the length of the GRx programme, also suggested by Pringle (2008) is recommended, but alternative strategies for long term support also need to be addressed. Assisting patients in establish a self-sustaining graduate group and/or buddy system may be a suitable option for the GRx programme. A participatory approach between patients and Regional Sports Trusts can facilitate this process, for example, by identifying group leaders and providing support and training to ensure that they have the necessary skills to run such a group.

7.3 Concluding Remarks

The findings of this thesis suggest that goal setting strategies used to promote regular physical activity should epitomise a patient-centred approach that will lead to self-reinforcing experiences of success and achievement. Avoidance and management of disease states and clinical risk factors to promote physical activity is associated with a greater risk of negative experiences and maladaptive responses. Therefore, goals focusing upon these outcomes may be counter-productive for achieving long term behaviour change. Refining the strategies used to promote increased activity in initiatives such as the GRx programme can be achieved by framing physical activity behaviour and its immediate benefits as the goal, not potential health outcomes that may or may not be realized. Strategies employed during patient consultations in programmes such as GRx has the potential to improve the health of primary care patient at the community level given the number of patients the programme is accessed by. Further research is needed to determine the most effective ways to implement these findings when initially consulting with patients.

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Appendices

Appendix A: Green Prescription Enrolment Form

Green Prescription Participant Registration Form		
Participant Details		
First Name _____	Date of Birth _____	
Surname _____	Gender _____	M / F
Hm Phone _____	Ethnicity 1 _____	
Wk Phone _____	Ethnicity 2 _____	
Mobile _____	Ethnicity 3 _____	
Address _____	Next of Kin _____	
	Phone _____	
Suburb _____	GP Name _____	
E-mail _____	Clinic _____	

Preferred Contact Time (☑)

☐ Morning ☐ Afternoon ☐ Evening

Green Prescription (☑)

☐ GRx Received (Date _____) ☐ Awaiting GRx (Letter Sent _____)

Date Registered _____ **Programme** _____ **GRx PSP** _____

Lifestyle Information (What are your interests? What is a typical day for you?)

.....

Would you say that in general your health is (☑)

☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

Health Information (☑)	Specific Condition
	IGT T1 T2
<input type="checkbox"/> Diabetes	_____
<input type="checkbox"/> Heart Conditions	_____
<input type="checkbox"/> High Blood Pressure	_____
<input type="checkbox"/> High Cholesterol	_____
<input type="checkbox"/> Respiratory Conditions	_____
<input type="checkbox"/> Muscle/Joint/Bone Conditions	_____ cigs/day
<input type="checkbox"/> Smoking	_____ due date
<input type="checkbox"/> Pregnant	_____
<input type="checkbox"/> Weight Concerns	_____
<input type="checkbox"/> Injury	_____
<input type="checkbox"/> Lack of Energy/Fatigue	_____
<input type="checkbox"/> Social Concerns	_____
<input type="checkbox"/> Allergies	_____
<input type="checkbox"/> Depression/Stress/Anxiety	_____
<input type="checkbox"/> Mental Health Conditions	_____
<input type="checkbox"/> Epilepsy	_____
<input type="checkbox"/> Stroke	_____
<input type="checkbox"/> Other	_____

How did you hear about this programme? (☒)

☐ GP

☐ PN

☐ Media

☐ Fried/Whanau

☐ Facility

☐ Other

Physical Activity and Nutrition Information

1 How important is it for you to be physically active regularly?

1 2 3 4 5 6 7 8 9 10

Not important

Very important

2 How confident are you that you can be physically active regularly?

1 2 3 4 5 6 7 8 9 10

Not confident

Very confident

3 What, if anything, stops you from being more active?

Time	Transport/Parking	Injury/Illness	Too Expensive
Safety	Work Commitments	Motivation	
Don't Enjoy It	Lack Support/Company	Don't know what to do	
Weather	Embarrassed	Uncomfortable	Other _____

4 What would help you be more active? What needs to change for you to be more active?

.....

5 How many days last week were you moderately active for a total of 30 minutes or more? _____ days

6 What type of activities did you do?

.....

7 Would you like to be more active than you are right now?

☐ Yes

☐ No → reconsider registration

8 What type of activities would you like to do or try?

Walking	Gym	Tai Chi	Running	Cycling
Aqua Activities	Yoga	Aerobics	Sport	Pilates
Dancing	Other _____			

8 How many hours yesterday did you spend doing the following?

Watching TV _____ hrs

Other Sitting Activities _____ hrs

Action Planning and Consent

Why did you come along to this programme today?

.....

What would you like to achieve from coming to this programme?

.....

What activities have you done in the past that you have enjoyed?

.....

What did you not enjoy?

.....

Where are you at now with regards to your Physical Activity and Health?

.....

What would be a good first step for you? → refer to Physical Activity Planning Sheet

.....

Notes

.....

Information Privacy Consent

I agree to and understand that all information will be held in the strictest confidence; details will not be released for any other purposes than under the provisions of the Health Information Privacy Code (section 2).

Participant Safety Consent

Persons registered in this programme do so at their own risk. Every precaution will be taken to ensure the Health and Safety of participants is upheld, however I understand that the facility where this programme is held will not be liable to any programme member should any injury, loss, or damage occur at the facility.

Images/Voice/Quotations Consent (please delete and initial this paragraph if not applicable). I consent to the use of my photograph, video, image, voice, and quotations being used in awareness raising strategies employed by Green Prescription. I understand that such resources will be use for educational purposes where the audience is working in health, for reporting purposes where the audience will be funders and stakeholders, and in promotional material where the audience will be community members who might benefit from the programme (including brochures, articles, and newsletters).

Signature

Appendix B: Summary table of Systematic Reviews of Clinical Exercise Interventions

Review	Inclusion criteria	Study description	Outcome measures	Authors conclusions	Comments
Foster et al. 2008 Interventions for promoting physical activity. Intervention type: Behavioural interventions aiming to increase physical activity	Randomised controlled trials	287 identified	Primary outcomes: Change in self-reported activity between baseline and follow-up.	Physical activity interventions have a moderate effect on self-reported physical activity, on achieving a predetermined level of physical activity and cardio-respiratory fitness.	Participants in the studies reviewed were generally white, well educated and middle aged
	Community dwelling adults	29 reviewed	Cardio-respiratory fitness.	The effect of interventions on self-reported physical activity (19 studies; 7598 participants) was positive and moderate (pooled SMD 0.28, 95% CI 0.15-0.41), as was the effect of interventions (11 studies; 2195 participants) on cardio-respiratory fitness (pooled SMD 0.52, 95% CI 0.14-0.90).	Pooled analysis for studies with comparable outcome measures.
	16 years and older	11, 513 participants	Adverse events.	There was support for self-directed physical activity with some professional guidance and on-going professional support.	Nine studies had a no-contact control group.
	Maximum of 10% subjects with an existing medical condition that may limit exercise Minimum 6 months follow up and either used an intention-to-treat analysis or, had no more than 20% loss to follow up	NZ, USA, UK, other (country of origin unspecified)	Secondary outcomes: <i>Standardised Mean Differences (SMD) for self-reported physical activity and cardio-respiratory fitness. Odds ratios calculated for studies with dichotomous outcomes.</i>		
Morgan et al. 2004 Approaches to increase physical activity: reviewing the evidence for exercise-referral schemes	Interventions providing access to activities and/or facilities Experimental or quasi-experimental studies Control group Initiated in a primary care setting	159 identified 9 reviewed 3180 participants 4 UK; 4 USA, 1 NZ	Physical activity behaviour (self-reported and attendance at exercise sessions)	Exercise-referral schemes increase physical activity levels in certain populations, namely individuals who are not sedentary but already slightly active, older adults and those who are overweight (but not obese). However, increases in the level of physical activity may not be sustained over time..	Experimental studies only. Adherence higher in people who were slightly active at baseline, overweight and older; participants were more likely to use leisure centres if they were slightly active at baseline. No pooled analysis.
Intervention type: Primary care referral schemes	Outcome measures of physical activity level				

Review	Inclusion criteria	Study description	Outcome measures	Authors conclusions	Comments
Kahn et al. 2002 The Effectiveness of Interventions to Increase Physical Activity A Systematic Review	Studies published in English 1980-2000 and conducted in an Established Market Economy Behavioural interventions targeting physical activity. Control group Primary investigations of interventions rather than, e.g., guidelines or reviews Outcome measure of physical activity behaviour or related measure	849 identified 94 reviewed Participant number unspecified	Primary Outcomes: Change in physical activity behaviour and aerobic capacity Secondary outcomes: Change in: physiological measures (e.g. blood pressure) body composition, measures of skill-based and metabolic fitness, mood <i>Effect sizes based on the net percent change from baseline.</i>	Evidence of effectiveness found for community-wide health education campaigns, school-based PE, and social support in community settings, especially multi-site, multi-component interventions. Self-reported activity increased by 35.4% (Interquartile Range (IQR): 16.7% - 83.3%). Ten studies measured change in total activity time: net median increase of 64.3% (IQR: 1.2% - 85.5%). Strong recommendation for: social support interventions; individually-adapted programs in community settings; creation or enhancement of access to places for physical activity combined with informational outreach activities.	Studies categorized and analyzed by the similarity of the intervention as follows: 1. Informational approaches 2. Behavioural and social approaches 3. Environmental and policy approaches Higher number and diversity of studies reviewed than other reviews, but included trials with weak study design and was not restricted to primary care referral programmes. Included a number of youth and school based interventions. Included non-randomised studies.
Review	Inclusion criteria	Study description	Outcome measures	Authors conclusions	Comments
Lawlor et al. 2001 The effect of physical activity advice given in routine primary care consultations: A systematic review	Studies assessing effectiveness of advice (verbal, written or other forms of advice) within a routine primary care consultation for increasing physical activity Control group Outcome measure of physical activity	38 identified 8 reviewed 4747 participants 6 USA; 2 Australia	Change in physical activity behaviour from baseline, and relative change compared with control group	Four of the six trials reporting short term (up to 8 weeks) results found evidence of effectiveness. One of the four trials with long term (4-12 weeks) follow-up found a sustained effect. Two randomised controlled trials reported negative short and long term results. Routine advice in primary care consultations is not an effective means of producing sustained increases in physical activity.	Included studies from any country in any language, and both randomized and non-randomized studies. Diverse outcome measures rendered statistical comparisons impossible and poor study design quality for many studies (e.g. no randomization or no blinding of the researchers). No studies included referral to support schemes.
Intervention type: Advice in primary care settings					

Review	Inclusion criteria	Study description	Outcome measures	Authors conclusions	Comments
Riddoch et al 1998 Effectiveness of physical activity schemes in primary care: a review Intervention type: Interventions based or initiated in the primary care setting	Adults (> 16 years) Studies aiming to improve physical activity, mediators of, or attitudes/intentions toward physical activity Initiated in a primary care setting Outcome measure of physical activity or related measure UK based	254 identified 12 reviewed >23, 482 participants 45 existing schemes 3 case studies for qualitative analysis UK only	Change in physical activity and related measures from baseline	Most studies report some form of improvement in either physical activity or related measures but the size of the effect is generally small and there is limited consistency across studies. Forty-one schemes had undertaken evaluation; those with data available showed a greater level of effect compared to published studies. Three case studies analysed qualitatively suggest a greater and more diverse impact than experimental studies. Perceived patient benefits were principally psycho-social factors.	Focused on physical activity promotion in primary care. Comparison with non-UK studies showed similar effect sizes. Non-experimental studies included, some with weak study design; evaluation data of real world programmes examined; qualitative analysis of case studies.
Review	Inclusion criteria	Study description	Outcome measures	Authors conclusions	Comments
Hillsdon et al. 1996 A systematic review of physical activity promotion strategies Intervention type: Home and facility based physical activity interventions in free living communities	Randomised control trials Single factor interventions to increase activity Healthy, community dwelling adults Minimum 12 weeks duration Outcome measure of physical activity behaviour	11 reviewed 1699 participants Home-based interventions: 7 trials, 1101 participants Facility-based interventions: 5 trials, 598 participants USA only	Change in physical activity behaviour from baseline, and relative changed compared with control group	Levels of physical activity can be increased and the increase can be maintained for at least two years. Trials that were able to demonstrate significant increases in activity involved exercise that was home based, of moderate intensity, involved walking, and had regular follow up. Five of the home-based trials showed positive results for increased activity from baseline and between intervention and control groups Two facility based trials showed a significant difference between intervention group and controls.	Follow on from 1995 review. Subjects were mainly white, middle aged, and well educated. Most subjects were volunteers recruited through local advertisements. No pooled analysis of results. Did not focus specifically on exercise referral schemes but rather on the promotion of physical activity in the community.

Review	Inclusion criteria	Study description	Outcome measures	Authors conclusions	Comments
Hillsdon et al. 1995 Randomised controlled trials of physical activity in free living populations: a review Intervention type: Physical activity interventions in free living communities	Randomised controlled trials Healthy, community dwelling adults Single factor interventions to increase activity Outcome measure of physical activity behaviour	10 identified 10 reviewed 1494 participants 9 USA 1 Switzerland	Change in physical activity behaviour from baseline, and comparison with control group	Previously sedentary adults can increase activity levels and sustain them. Promotion of these changes requires personal instruction, continued support, and exercise of moderate intensity which does not depend on attendance at a facility. The exercise should be easily included into an existing lifestyle and should be enjoyable. Walking is the exercise most likely to fulfil these criteria.	Subjects were mainly white, middle aged, and well educated. Most subjects were volunteers recruited through local advertisements. No pooled analysis of results. Did not focus specifically on exercise referral schemes but rather on the promotion of physical activity in the community.

Appendix C: Participant Information Sheet

UNIVERSITY OF OTAGO, CHRISTCHURCH

Te Kura Rata o Otautahi

Christchurch School of Medicine and Health Sciences
Department of Public Health and General Practice

UNIVERSITY
of
OTAGO



Te Whare Wānanga o Ōtāgo

Understanding *Success* in the Green Prescription Programme

Information Sheet

Introduction

You are invited to participate in a study which examines how participants who attend the Green Prescription Programme think about success and achievement. The study aims to find out about the views of the people who have received a Green Prescription by interviewing them when they enrol with the programme and then again after five months. You can decide whether you would like to take part in this study over the next two weeks. Participation is voluntary; you can choose not to participate.

About the study

What are the aims of the study? To understand what *success* means to people who attend the Green Prescription Programme.

Who is able to participate in this study?

If you have received a Green Prescription from your doctor and attended the group session in Christchurch for less than three months, you may be able to participate.

How much time will it take? The first interview will be less than one hour. The second interview will take place after five months later, which will last between 40 minutes – one hour. Within two months of each interview, you will be contacted by phone to discuss the interview; each call will take less than 20 minutes.

Where will the study be held? The interviews can be held at a location that is suitable for you. This may be at the Green Prescription programme venue, in your own home or at the Department of Public Health.

What else is required? If you agree, the two interviews will be audio-taped so a written copy can be made afterwards. With your permission, access to your patient registration information held by Sport Canterbury will also be requested.

What will happen to the results? All the information collected in this study will be placed in a locked filing cabinet within the Department of Public Health at the University of

Otago. This information will remain confidential and will be accessed only by the principal researcher and study supervisors. It will be stored for five years before being destroyed.

Will I be reimbursed for my time? Yes, you will receive a \$20 gift voucher at each interview as reimbursement for your time.

Confidentiality: The audiotapes and written form of the interviews and the Patient Registration Form will only be accessed by the principal researcher and two study supervisors. In all written reports a pseudonym (a false name) will be used instead of your real name, and the names of any other people or place names that may be mentioned during the interviews.

Risks and Benefits: The results of this study may contribute making the Green Prescription Programme more effective by understanding the perspectives of the participants.

If you are interested in the results of this study, you can request a summary to be posted to you.

Participation

- Your participation in this study is voluntary (you can choose not to participate).
- If you agree to take part, you can withdraw from this study at any time and for any reason.
- If you choose not to take part or to withdraw, this will not affect your involvement with the Green Prescription Programme or your future health care.
- You may have a friend, family or whanau support and/or an interpreter to help you understand this study and be present during the interviews.
- If you have any questions or concerns about your rights as a participant in this study you can contact a Health and Disability Services Consumer Advocate, on (03) 377 7501.

Statement of approval: This study has received ethical approval from the Upper South B Regional Ethics Committee.

For Further Information:

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Appendix D: Participant Consent Form

UNIVERSITY OF OTAGO, CHRISTCHURCH

Te Kura Rata o Otautahi

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Te Whare Wānanga o Ōtāgo

Christchurch School of Medicine and Health Sciences
Department of Public Health and General Practice

Understanding *Success* in the Green Prescription Programme Consent Form

- I have read and I understand the information sheet dated 05/03/2008 for volunteers taking part in the study designed to explore understandings of success in the Green Prescription Programme.
- I have had the opportunity to ask questions about the study and I am satisfied with the answers I have been given.
- I have had the opportunity to have support from family/whanau, a friend or language interpreter to help me ask questions and understand the study and to be present during the interviews.
- I understand that taking part in this study is voluntary and that I can withdraw from the study at any time without giving a reason. If I decide not to participate or to withdraw this will not affect my involvement with the Green Prescription Programme or my future health care.
- I understand that my participation in this study is confidential and that no material which could identify me will be used in any reports from this study.
- I understand the compensation provisions for this study.
- I have had time to consider whether to take part.
- I know who to contact if I have any questions about the study.

Please circle your responses below:

I consent to my two interviews being audio taped

YES/NO

I consent to the researcher, Lil Convery, having access to my enrolment form held by Sport Canterbury

YES/NO

I consent to being contacted by phone to discuss the investigators interpretation of my interviews

YES/NO

I wish to receive a copy of the results when available
YES/NO

I have received reimbursement to the value of \$20

YES/NO

I _____ (full name) hereby consent to take part in this study.

Signature: _____

Date: _____

Study explained by: _____

Researcher's Signature: _____

You are encouraged to raise any questions or concerns you may have related to this study. Your opinions, comments and suggestions are important; please contact the principal investigator or study supervisors at any time on the details listed below:

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Request for Interpreter

English	I wish to have an interpreter	Yes	No
Maori	E hiahia ana ahau ki tetahi kaiwhakamaori/kaiwhaka pakeha korero	Ae	Kao
Cook Island	Ka inangaro au i tetahi tangata uri reo	Ae	Kare
Fijian	Au gadreva me dua e vakadewa vosa vei au	Io	Sega
Nieuan	Fia manako au ke fakaaoga e taha tagata fakahokohoko kupu	E	Nakai
Samoa	Ou te mana'o ia i ai se fa' amatala upu	loe	Leai
Tokelaun	Ko au fofou ki he tino ke fakaliliu te gagana Peletania ki na gagana o na motu o te Pahefika	loe	Leai
Tongan	Oku ou fietma'u ha fakatonulea	Io	Ikai

Appendix E: Protecting Participant Confidentiality

Identifiable personal data will be recorded on the participant consent form; programme registration forms and interview audio-recordings. Identification of participants is required until the completion of the data analysis on the second set of interviews, in order to match individuals for the first and second interview transcripts; registration forms, and to contact participants for validation of interview transcripts. Information collected in this study may be used for future research purposes; therefore retention of participant details is required in order for consent to be obtained.

To protect the identity of participants', a numerical data matching system known only to the researcher will be used. An identity-only participant data set will be generated by matching identifiable patient information with a randomly generated number. A de-identified patient data set will then link the assigned number with a pseudonym. The two data sets will be stored in separate locked filing cabinets on the premises of the Public Health and General Practice Department, University of Otago, Christchurch

Pseudonyms will replace the participants' real name, and the names of other people or places discussed during the interview, in all interview transcripts, subsequent reports and publications.

In accordance with ethical guidelines, consent forms and participant details will be held for five years before being destroyed. During the time of the research project, this data will be the responsibility of the principal researcher. After this time, it will become the responsibility of the project supervisors.

Identifiable patient details and the data matching system will not be stored electronically; however, the interview transcripts are likely to contain identifiable information. The transcripts will use only the assigned pseudonyms and will be stored electronically on a password-protected computer at the Public Health and General Practice Department. Excerpts taken from the interview transcripts for use in reports and publications will avoid the use information which could disclose the identity of participants.

Appendix F: Semi-structured Interview Schedule: Interview One

Prologue: This study is about what people who come to this programme think about the idea of success, and what it means to be successful (or unsuccessful). Because 'success' can mean very different things to different people, there are no right or wrong answers; it is really to find out what you think, your opinions and your own experiences. When I talk about 'success', it is similar to having a sense of achievement or satisfaction – they are different ways to describe the same thing.

1. Process of involvement with GRx

How did you get involved with the programme?

Areas of interest:

- Reason for referral.
- Awareness of the need for change.
- Initial impressions of the programme.
- Experiences in the health system.

3. Expectations and goals related to the programme

What goals did you set when you first enrolled?

What would you like to be different in five months time?

Areas of interest:

- Profiling current goals and expectations.
- Personal and medical significance of goals.
- Goal achievement motivations.
- Perceived benefits of increasing physical activity levels.

4. Understanding success

If you think five months ahead, what would describe as successful or as an achievement?

Areas of interest:

- What will characterize a successful outcome.
- Do they perceive success to arise only from intentional goal setting and achievement, or can it be realized only looking back in time.
- Is success seen as discrete events or more globally, e.g. in the context of the life span or feed into their self-perception.
- Implications on future behaviour and expectations.

5. Who defines what success is?

What do you think other people would see as a successful outcome for you? E.g. doctor, family, friends.

Areas of interest:

To what extent do they define success themselves or on other peoples opinions
Similarities and differences with their own interpretation of success.
Relationship between self-perception and other's perceptions/opinions.
Perceptions, advice and judgments of other's.
The influence of social or cultural norms.
Patient-doctor communication relating to change.

6. Specific experiences of success and failure

Can you tell me about an experience you have had in the past where you felt you were successful or you had achieved something? It does not need to be related to physical activity or lifestyle.

What was the most satisfying aspect of this experience?

Areas of interest:

Who dictated whether it was successful or not.

Recognition of barriers or challenges.

Is success described as specific goals, events or changes.

Is success seen as an on-going process/constant improvement/something that never fully ends.

Can you tell me about an experience you had when you felt you were not successful at something you had set out to achieve?

Areas of interest:

Relative importance of achieving success versus avoiding failure.

Success in the eyes of others –feedback, avoiding negative feedback.

7. Current priorities in life

What would you say are the top priorities in your life over the next few years?

Where do you see your health and physical activity fitting in with those priorities?

Areas of interest:

Relative important of achieving success in their health/lifestyle versus the importance of success in other areas.

Health as a priority or an enabler for other priorities.

The influence of family and significant others.

That's all the questions. Is there anything else you would like to add? Do you have any questions for me

Appendix G: Semi-structured Interview Schedule: Interview Two

How have things been with your health and physical activity over the last five months?

Have things gone as you expected?

What has changed in the last five months?

Physical activity levels/health status/physical/mental aspects/confidence

What was your goal when you first started?

Have you made progress toward your goal, made no progress or moved further away from your goal?

What has helped or hindered your progress?

Motivation

What has kept you going/what has been most helpful?

Barriers - what were they/what did you do about them?

How easy/difficult has it been to increase your physical activity/achieve your goals?

Have you tried to achieve your goals/increase your physical activity in the past? If yes, what was different this time?

Success

Tell me what your major achievements have been in the last five months?

Tell me about an experience since the last interview where you felt you had achieved something?

Overall, would you say you have been successful in increasing (or maintaining) your physical activity for your health?

Significant others: family, friends, doctor, GRx programme staff.

What do other people in your life think about the progress you have made?

What feedback have you received?

Would you say you feel more successful when you do better than others, say outperforming them, or when you master something new?

What makes you say that/what does that mean for you?

If I asked you to set yourself a challenging goal for the future, do you think you would do the same, better or worse than you have done in the past?

Appendix H: Thematic Analysis - Coding Scheme

Code	Statement Description	Sub-themes	Themes
A1	Regaining or improving physical function	Physical function	Functional ability
A2	Proving functional capabilities to oneself	Physical function Self-concept	
A3	Exercise as an enabler to other life goals	Physical function	
A4	Being well for others – quality time and avoiding being a burden	Physical function	
A5	Achieving the expectations of others – doctor, family	Physical function Self-concept	
A6	Not fulfilling roles and family responsibilities	Physical function Self-concept	
A7	Ageing well	Physical function Self-concept	
A8	Seeing oneself as unwell, older	Stereotypes Self-concept	
A9	Avoiding ageing, non-acceptance of age related functional decline	Stereotypes	
A10	Use it or lose it	Physical function	
A11	Admiration of, and inspiration from others achievements	Stereotypes Self-concept	
A12	Positive self-talk and a sense of self-efficacy	Self-concept	
A13	Favourable comparisons with others	Self-concept Social comparisons	
A14	Performing or being better than others, or not being worse	Self-concept Social comparisons	
A15	Dislike of competitiveness/not setting out to be better	Social comparisons	
A16	Fitness for travelling; activities of daily living	Physical function	
B1	Experiencing or striving for mastery/challenging self-standards	Goals	Physical activity achievements
B2	GRx form goals - fitness, lose weight, general wellbeing	Achievements	
B3	Overcoming challenges or obstacles	Achievements	
B4	Improving gradually	Achievements	
B5	Hard work, effort, giving things a go	Achievements	
B6	Getting praised or receiving positive verbal feedback	Feedback	
B7	Specific, measurable and time limited goals	Goals	
B8	Activities of daily living, exercises easier	Achievements	

B9	Personal measures of fitness; self-monitoring	Monitoring	
B10	Goals for competitive sport	Goals	
B11	Feelings of achievement/sense of pride or confidence	Sense of achievement	
C1	Lack of motivation to exercise at home	Barrier	Embedding an active lifestyle
C2	Having somewhere to go	Enabler	
C3	Positive thinking and self-talk	Enabler Identity/self-beliefs	
C4	Social support of family, peers and health practitioners	Social influences	
C5	Making exercise a priority	Valuing activity	
C6	View of oneself as active, healthy, physically able	Identity/self-beliefs	
C7	Collective goals	Social influences	
C8	Enjoyment of exercise	Valuing activity	
C9	Social participation	Social influences	
C10	Anxiety about graduation	Barrier/loss of enabler	
C11	Failure or suboptimal performance; anxiety, avoidance	Barrier	
C12	Financial and transport issues	Barriers	
D1	Maintaining or regaining good health	Health related	Measures of health and disease
D2	Managing clinical markers of an existing condition	Disease related	
D3	Avoiding deterioration of an existing condition	Disease related	
D4	Avoiding onset of a health condition or future adverse events (e.g. a second heart attack)	Disease related	
D5	Goals of medical outcomes	Disease related	
D6	Losing weight	Disease related	
D7	Experience of a triggering health event	Disease related	
D8	Unhelpful to focus on health/weight loss	Disease related	
D9	Inevitability of illness	Disease related	
D10	Negative feedback from doctor regarding health status or risk	Disease related	
D11	Descriptions of illness in others/desire to avoid similar circumstances	Disease related	