'An analysis of patients referred to a Primary care exercise referral scheme; attendance, completion, 12 month adherence and the experiences of overweight participants'

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Abstract

The purpose of an Exercise Referral Scheme (ERS) is to offer supervised, safe and appropriate group exercise and activities for individuals who can benefit physiologically and psychologically from increasing their level of physical activity. Referral from a health professional for activities is usually to a local leisure centre or alternative location. Assessments are carried out by professional, qualified staff who prescribe activity type and frequency. The activities are usually subsidised over a 10-14 week period, after which the cost is incurred by the individual.

In recent years there has been a proliferation of ERS's as a means of increasing physical activity in the UK. Primary Care Trusts have invested in ERS, yet the evidence base for their ability to increase physical activity is debatable. Consequently, the overall aim of this research was to gain a greater understanding of the process of ERS through a case study example. By improving the services an ERS can offer to its participants, attendance and completion are likely to increase, ultimately resulting in increases in physical activity levels and therefore health.

The present research has used mutli-methodological design to evaluate a community ERS in the North West of England. Four separate studies have allowed evaluation of characteristics of those who do not attend against those who do attend (study 1); those who complete an ERS against those who do not (study 2) and those who subsequently sustain physical activity 12 months post intervention (study 3). Furthermore, a qualitative tracking study followed participants' experiences whilst on an ERS specific to overweight individuals, over a 12 week period (study 4).

Results indicate variances in individuals referred to the scheme; females being more likely to be referred and attend an ERS than males ($p<0.05$) and those in the 46-60 year bracket being significantly more likely to attend ($p<0.05$). Reason for referral was significant for attendance ($p<0.05$), as well as month of referral ($p<0.05$).

Completion rates on the scheme were 42% at 12 weeks and were greatest for 31-45 year old males. However, overall there was a significant difference between age and likelihood of completing an ERS; individuals aged between 41-75 years were more likely to complete ($p<0.05$). Family and friend participation support was significant to completion of the ERS. Gender ($p>0.05$), pre-intervention physical activity levels ($p>0.05$), family reward support ($p>0.05$) and referral category ($p>0.05$) were not significant to completion of an ERS.

Post-intervention, physical activity levels were significantly increased by 15 METS (equivalent to 3, 15 minute bouts of moderate intensity exercise) ($p<0.05$), although this was not significant at any other time over a 12 month period. Participants who perceived themselves to be participating in the nationally recommended levels of physical activity, increased from 41% at baseline, to 84% at 12 weeks (post- intervention), and 72% at 12 months.

Qualitative analysis with overweight participants on an ERS showed problematic issues such as others perceptions relating to their inactive lifestyle. Participants gained most support from other overweight participants on the scheme, compared to significant others (e.g. spouse, friends) due to their clinical similarities. 58% of participants monitored completed the scheme, which is greater than completion of the general ERS. Outcomes of success on such interventions are discussed, along with experiences of participation in an ERS.

The research has shown that the use of ERSs in primary care can increase the short term physical activity levels of previously sedentary individuals. Characteristics of individuals, who are more likely to attend, complete and sustain physical activity long term, have been determined. Future success of such schemes should involve psychological outcomes, and physiological factors other than increases in physical activity.

Literature Review

With the acknowledgement of the detrimental effect to health of a sedentary population, methods of increasing physical activity in populations have developed. One popular area for the promotion of physical activity is through Primary Health Care (PHC), due to the large number of people who have contact with a health practioner in their Primary Care Trust (OPCS, 1995). One of many methods of promoting physical activity within PHC is Exercise Referral Schemes (ERS) and in recent years there has been a proliferation of ERS's as a means of encouraging a physically active lifestyle in primary care. There has been commitment and investment by Primary Care Trusts (PCT's) to ERS's, yet the evidence base for their ability to increase physical activity is debatable. Through an awareness of the current literature surrounding ERS and factors associated with their implementation within the population, the rationale for the thesis here with will be understood.

1.1 Definitions of exercise, physical activity and health enhancing physical activity

> *'The exercise boom is not just a fad; it is a return to 'natural' activity - the kind for which our bodies are engineered and which facilitates the proper function of our biochemistry and physiology. Viewed through the perspective of evolutionary time, sedentary existence, possible for great numbers of people only during the last century, represents a transient, unnatural aberration'*, (Eaton *et al.*, 1988, p. 168).

The terms physical activity, exercise and health enhancing physical activity (HEPA), although related, have discretely different meanings. Their common element is their use of physical bodily movement, using energy. However, the differences lie in their concepts; 'exercise' incorporates somewhat structured

activity, whereas 'physical activity' encompasses all forms of daily activity requiring physical movement using energy, including that acquired during transport, occupation and leisure . Furthermore, the more recent concept of HEPA (European Commission, 1996) embraces all physical activities that are conducive to physiological and psychological health, by focusing on light and moderate intensity exercise, rather than vigorous activities.

1.1.1 Physical activity and its benefits to health

It is widely accepted that physical activity has a positive effect on psychological and physiological health, when it is carried out at the accepted frequency, duration and intensity (ACSM, 1998). Moreover, inactivity is detrimental to health and is a contributory factor for cardiovascular and associated diseases e.g. obesity (BMI >30) and diabetes mellitus (Powell & Blair, 1994; Prentice & Jebb, 1995). The World Health Organisation (WHO) (2004) estimated that physical inactivity currently causes 1.9 million deaths annually worldwide.

Due to the ailments that can occur as a result of a sedentary lifestyle, the Department of Health have stated that the human body actually flourishes on a physically active lifestyle (DOH, 2004, p16). Therefore, a physically active lifestyle should be presented as 'today's 'best buy' for public health' (HEA, 1996), as it is said to not only add 'years to one's life', but also 'life to one's years' (Jegathesan, 2002). It has been shown to improve blood lipid profile, insulin resistance and lower blood pressure (Bouchard & Despres, 1995). It is beneficial for weight loss, musculoskeletal ailments and improves psychological condition (DOH, 2004). In fact, many chronic conditions can be alleviated through increasing physical activity (Bouchard *et al.*, 1994). Moreover, when carried out at the recommended frequency and intensity, it is unlikely to be detrimental to health (DOH, 2004).

There have been a number of different recommendations resulting in current physical activity guidelines in the UK. Primarily, a minimum of 2.5 to 3.5 hours of moderate weekly physical activity was recommended as the optimum that individuals should participate in to maintain health (Wimbush, 1994 &

Whitehead, 1995). The WHO recommended up to 1 hour each day of moderate physical activity (WHO, 2003), and more recently, the Department of Health (2005) recommended 30 minutes of moderate activity on 5 or more days each week. Formerly, there was an emphasis on vigorous exercise for health. However, there is now a realisation that moderate intensity exercise is as beneficial to health (European Health Report, 2002). Furthermore, the recognition that sedentary or moderately active individuals achieving the current guidelines is unrealistic, has led to a more recent focus on HEPA. In particular, attaining moderate physical activity in previously sedentary individuals is especially favourable to the population's health. The importance of HEPA is emphasised in the European Health Report (2002), which highlights the health benefits of intermittent daily activity of moderate intensity. In addition, it emphasises that this activity does not have to be structured and can include activities which are a consequence of daily living.

Physical activity is now being recognised as a key factor in the prevention of certain 20th century diseases. Numerous national (DOH, 1991, 1996, 1999, 2002 & 2004; HEA, 1992 & 1998; HDA, 2003; Hillsdon & Mulvihill (HDA), 2004) and international (WHO, 1997; 2002 & 2003) reports have emphasised the need to increase activity levels within populations. However, exercise behaviour needs to be maintained to sustain physiological and psychological health improvements that are accrued as a result. The positive metabolic benefits associated with physical activity for Type 2 diabetes last only 3-10 days after stopping activity. In contrast, the protective effects take up to 4 years to develop (Ha *et al.*, 1998; Scottish Intercollegiate Guidelines Network, 2001). Therefore, physical activity must be sustained and become habitual.

1.1.2 Population levels of physical activity

The WHO (2004) estimated that around 60% of the world population is not active enough to meet current guidelines. Moreover, Finland and Canada are the only two developed countries who have shown increases in physical activity over the last two decades (Department of Health and Human Services, 1996). Although Australia's current physical activity levels show that 57% of their population is

participating in the recommended 30 minutes, 5 times a week prescription (WHO, 2004), this has declined from 62% in 1997 (Armstrong, 2000).

Nationally, it is evident that a large percentage of individuals within the UK are not participating in the approved amounts of exercise (Allied Dunbar National Fitness Survey, 1992; DOH, 1999b; 2004). In 1998, only 40% of men and 26% of women were active enough to meet the Department of Health (1996) national guidelines of 30 minutes moderate intensity, 5 times per week (DOH, 2004). In contrast, the National Diet and Nutrition Survey (2002) reported that only 28% of men and 29% of females in the UK describe themselves as either 'not very physically active' or 'not active at all' (Henderson, 2002).

Although these figures give us an estimate of the UK population's activity levels, it is well documented that physical activity estimates are often inaccurate; responders may overestimate their levels of physical activity, answering to what they think professionals want to hear (Shephard; 2003). Furthermore, the problem of quantified physical activity measures increases in complexity, as comparisons are attempted between studies and (even more so) countries, due to lack of consistency between measurement tools and their varying validity and reliability levels.

1.1.3 Factors influencing population physical activity levels

Health-related behaviours have changed drastically since the turn of the 20th century. One of the most prominent transformations relating to physical activity is that of mechanical transport and machinery development, which has resulted in a drastic reduction in human energy expenditure (WHO, 2003; HOC, 2003-4; DOH, 2004). In conjunction with other adaptations, such as urbanisation, this has ultimately led to an escalation of sedentary behaviour, the consequences of which are today's main causes of morbidity and mortality (European Health Report, 2002; WHO, 2002 & 2003). It has been suggested that our current society actually encourages chronic disease through an inactive lifestyle and poor diet, and that inactivity needs to be addressed and treated as a disease rather than a treatment.

> *"It is tragically ironic that major legislative actions have been implemented to protect society against all other forms of preventable deaths, except those resulting from physical inactivity"*
>
> (Booth, 2000 in McKay, 2003, p98.).

Furthermore, it is proposed that whilst levels of leisure time physical activity have increased, levels of walking and cycling as a means of transport have decreased, leading to an increase in 'exercise', though an overall reduction in 'physical activity' (European Health Report, 2002; DOH, 2004). The National Travel Survey (2002) reported that total miles travelled on foot and bicycle per year fell by 26% and 36% respectively between 1975 and 2002. However, those individuals who attain the recommended levels of physical activity for health are most likely to achieve it through walking (DOH, 2004).

On a personal level, the Allied Dunbar National Fitness Survey (1992), barriers for a physically active lifestyle were categorised into physical (injury or disability), emotional (shyness), motivational (lack of enjoyment), time (work and childcare commitments) and availability (suitable facilities, expense) barriers. More recently and specifically, Gidlow *et al* (2005) reported barriers to attendance on ERS's through a systematic review. Reported barriers included illness or injury, lack of time, work pressure, not wanting to attend alone, transport problems and interruption of attendance due to holiday periods.

1.2 Policies to tackle physical inactivity within the general population

Jegathesan (2002) recommended that responsibility lies with both the individual and the governing bodies to ensure that policies are set out to facilitate an active lifestyle. He states that for an individual to become active, they '*need an environment that will empower, enable and facilitate and motivate them*' (p17). Thus, whilst it is an individual's responsibility to partake in physical activity, the environment in which they live must assist and promote this physically active lifestyle. Therefore, inactivity is a considerable public health concern for those involved in health promotion and has led to increased demand by politicians for

policies and interventions to tackle these problems. The most prevalent policies have aimed to, not only identify the causes and problems of inactivity and the associated health risks, but also to highlight methods of sustaining exercise behaviour (HDA, 2004) and the impact of the environment on physical activity choices (DoH, 2004). From this, they emphasise interventions to deal with the rising problems related to physical inactivity.

1.2.1 Strategies to tackle inactivity on an International level

Leadership for researching inactivity has come from the WHO (2004), who have reported on diet, physical activity and related topics. WHO's Global Strategy on Diet, Physical Activity and Health (2004) aims to '*promote and protect health by guiding the development of an enabling environment for sustainable actions at individual, community, national and global levels, that, when taken together, will lead to reduced disease and death rates related to unhealthy diet and physical inactivity' (p.7)*.

Large scale, longitudinal interventions such as the Seven Countries Study (Keys, 1970) reported that Finland had the greatest rates of mortality from Coronary Heart Disease (CHD), and as a consequence, attempts to reverse this statistic were made. In 1988, WHO presented the MONICA project, an international venture to monitor the growing incidence of CHD (WHO, 1998). Over a 10-year period, from the mid 1980's to mid 1990's, CHD death rates reduced most rapidly in Finland and Northern Sweden (European Health Report, 2002). Thirty years on from the Seven Countries Study (1970), Finland now has reduced its average mortality rate by 69%. Data from the National Public Health Institute (2001) show that leisure time Physical Activity (30 minutes of leisure time physical activity twice a week) in the Finnish population has increased by 20% over the past 20 years. An estimated 60% of the population are now achieving these recommended levels. Moreover, within the European Union, Finland has the lowest proportion (15%) of individuals who participate in less than the recommended 3.5 hours of physical activity per week (European Health Report, 2002).

Interestingly, health statistics in some under developed countries are showing similar trends. One example of this is Mauritius in the Indian Ocean, where reported increases in cardiovascular disease and diabetes in 1987 led the country to develop a national intervention to reduce the incidence of these diseases, using mass media, fiscal and legislative measures and community health education activities. It aimed to promote healthy lifestyle behaviours over a 5-year period. The intervention resulted in decreased hypertension, total serum cholesterol, cigarette smoking and alcohol consumption. Moreover, moderate leisure physical activity levels increased by 5.2% in males and 1.4% in females. However, the prevalence of overweight and obesity increased (as measured by waist to hip ratio and body mass index (BMI)), most probably due to more westernised eating habits (Dowse *et al.*, 1995).

More recently, reports such as 'Reducing Risks, Promoting Healthy Lifestyle' (WHO, 2002) stated that their ultimate goal was to assist governments around the world to raise the life expectancy of their populations. In addition, they outline that substantial health gains can be made for relatively modest expenditures on interventions, a factor which is of particular importance in less affluent countries. Although physical activity is not directly considered as a means of reducing these risks, due to the problems of hypertension, high cholesterol and obesity, it is integrated into the WHO report as a means of reducing these lifestyle diseases.

A European Network for the promotion of HEPA was set up in 1996 and focuses on the facilitation of national HEPA policy and strategy development. Publications have included guidelines for the promotion of HEPA (1996) and walking and cycling as a means of transport (Foster, 2000). HEPA interventions have been instigated in many EU countries, including Finland, Denmark, Norway and the United Kingdom.

The above strategies suggested considerable physical inactivity was standard for a large percentage of the population. However, the amalgamation of government policies worldwide, nationally and within communities has encouraged multi-level and multi-methodological interventions to encourage a physically active lifestyle.

1.2.2 Strategies to tackle inactivity at a National level

The General Household Survey (1971-2003), along with the Allied Dunbar National Fitness Survey (1992), represent the primary national surveys on the health and fitness of the UK population. In concurrence, 'The Health of our Nation' (1991) and 'Saving Lives: Our Healthier Nation' (1999) were two of the foremost DoH white papers which aimed to develop new health initiatives at a local and national level. Within both documents, there is an emphasis on individual responsibility for health, in combination with Government support, to reduce the prominence of non-communicable, chronic diseases.

The promotion of 'healthy behaviours' is embedded into documents such as the UK Government's National Service Frameworks for Coronary Heart Disease (NSF for CHD) (DOH, 2000a) and Diabetes (DOH, 2001b), and strategies from the Department of Transport (DFT 2002; 2004), Department of Transport, Environment and the Regions (DETR, 2000), and Department of Culture, Media and Sport (2002). Furthermore, the former Health Education Authority (HEA), now known as the Health Development Agency (HDA), has published numerous documents over the past 10 years. These aim to develop awareness and tackle the problems, together with other agencies such as the Department of Health (DOH) (appendix 1).

Concurrently, due to the growing concern for the nation's ever-increasing overweight population, increasing physical activity to prevent and reduce the numbers of overweight and obese individuals, through lifestyle interventions, has occurred both in the UK and worldwide (WHO, 2003). In 1992, the Department of Health published a document aimed at tackling the obesity epidemic, which set targets to reduce the current obesity figures to those of 1980 (6% for males, 8% for females). Since then, further documents have been produced, either alone, or as part of larger papers, by the National Audit Office (NAO), 2001; the DOH, 2002; the Health Development Agency (HDA), 2003; Royal College of Physicians (2004); and the House of Commons (HOC) (2004).

1.3 Interventions to increase physical activity

Fentem & Walker (1994) reported that, by 2005, a 10% decrease in the number of sedentary individuals was to be achieved in the UK. More recently, the Wanless report was published and estimated current (2002) and projected (2022) costs to the NHS, if health patterns continue. A conclusion resulting from the latter report in 2002 asserts that, over the next 20 years, government spending must concentrate on improving health care within the UK. To achieve this, it was stated that the NHS must draw on its resources wisely, including disease prevention and health promotion, to reduce long term costs, with physical activity promotion being an important component of this. Furthermore, the need was emphasised for interventions that target individuals, who were at greater risk of ill health.

Physical activity interventions are likely to be actioned at a variety of levels, including individual, community and population. Examples of the latter include the former Health Education Authority's 'Active for Life' (HEA, 1996-2000) national campaign to increase activity levels within the UK, using mass media. Community initiatives, such as the Department of Health 'Local Exercise Action Plans' (LEAP) (DOH, 2004) and the British Heart Foundation's 'Walking your Way to Health Initiatives' (WHI) (BHF & Countryside Agency, 2000-2005), are attempting to encourage the sedentary population to become more active. Furthermore, interventions within schools, workplaces, primary and secondary health care and those providing an environment which is conducive to physical activity are functioning throughout the UK (McKenna and Riddoch, 2003 and Hillsdon et al., 2004). The benefit of the multi-agency and level promotion identified is its ability to tackle sedentary populations at many levels. As highlighted by Taylor (in McKenna and Riddoch, 2003), physical activity promotion in only one of these areas will have little impact on an entire population.

1.3.1 Interventions to increase physical activity in Primary Health Care

As stated above, one of the many arenas in which a physically active lifestyle is encouraged is primary health care. This is due to the large number of people who have contact with a health practioner in their Primary Care Trust (OPCS, 1995) and the perceived impact of advice from a general practioner (Taylor in Riddoch and McKenna, 2003).

PCT's were set up by the Department of Health in 2000 to commission health services to meet the demands of that community (Farrar, 1999). They provide one community-based opportunity to promote widespread health enhancing physical activity due to the associations they hold with members of the community, health professionals and national bodies. With these stakeholders forming an alliance, in theory, there is considerable prospect for success. Furthermore, the advantage of community-based initiatives is that they can acknowledge local priorities and thus accomplish better health for the communities themselves.

The then Secretary of State for Health, Alan Milburn (2001) stated that

> "*The health service has a key role to play in giving people not only advice, but also the support they need in making changes to improve their health*" and that "*primary care can play a vital role in helping people to achieve the recommended levels of physical activity*".
>
> (NQAF for ERS, 2001, p.iii).

Thus, primary care potentially presents an ideal backdrop for providing health education and physical activity promotion within the UK. Furthermore, it has long been considered an opportunity for acknowledging cause of disease; Balint (1961) emphasised the fact that health professionals must assist their patients in learning about their health and illness experiences, and through this, help them to prevent and cope with their health status (Herxheimer, 2001).

To date, there are numerous methods in which physical activity has been promoted in primary care. These include the provision of written and verbal information, counselling methods and health screening (Riddoch et al, 1998; Taylor in Riddoch and McKenna, 2003). These have been shown to differ in success as discussed below (section 1.3.2), however; overall, the more intense interventions tend to be more successful in promoting a physically active lifestyle.

1.3.2 Effectiveness of health professionals in Primary Care increasing physical activity levels.

The suggestion that GP's extend their role from the treatment of the sick to the promotion of healthy living was first proposed by the Department of Health and Social Services (1978). The promotion of an active lifestyle by health professionals is an area less popular than others, such as smoking cessation (Graham *et al.*, 2004). Furthermore, the concept of actually "prescribing" exercise for individuals, as opposed to merely suggesting the benefits of physical activity, is a more recent means of promoting a physically active lifestyle in previously sedentary populations. In fact, only since the early 1990's have health professionals been prescribing exercise for their patients (Carroll *et al.*, 2002), within the so-called 'GP ERS's'.

Campbell *et al* (1985) first researched the notion of exercise prescription in primary care in the UK and at the time of Riddoch *et al*'s publication in 1998, 254 papers relating to the promotion of physical activity in primary care were identified internationally. Of these 254, only twelve studies met their inclusion criteria, which required that the research had measurable outcomes of physical activity levels, was within a primary care setting, and that the aim of the intervention was to increase physical activity levels within a population. Thus previous studies looking at primary care physical activity promotion schemes are sparse, particularly when restricted to those within the UK (Riddoch *et al.*, 1998). Of those outside the UK, there are several, and of these, a number have found benefits for primary care physical activity promotion (Lewis and Lynch, 1993; Calfas *et al.*, 1996; Calfus *et al.*, 1997; Marcus *et al.*, 1997; Wiesemann *et al.*,

1997; and Swinburn *et al.*, 1998). However, others have found no evidence of effectiveness (Graham-Clarke and Oldenburg, 1994; Burton *et al.*, 1995).

Initial evidence suggested that GP's were uninterested in exercise promotion. Miilunpalo (1991) reported that Finish GP's rated training in exercise counselling less important than ten other health behaviours. Williford *et al.*, (1992) reported that fewer than half of the physicians questioned required exercise history as a part of their routine assessment. Calnan and Williams (1993) found that only 31% of UK General Practitioners "always" promoted exercise with their patients, while 36% "occasionally" did so. However, more recent reports suggest that this figure has increased, as awareness of the importance of physical activity for health has grown. For example, McKenna *et al.*, (1998) indicated that very few staff (measured as 1.8% of responding health professionals in the precontemplation or contemplation stage of change for physical activity) reported "never" promoting physical activity. In addition, 'documentation in Up and Running' reported the numbers of GPs who prescribed exercise versus anti depressants in patients with mental health problems. The research reported that only 5% would use exercise therapy as one of their three most common treatments; this is compared to 42% of GP's who have access to an ERS (The Mental Health Foundation, 2005).

Lewis and Lynch (1993) carried out a randomised control trial looking at the impact of physical activity advice from family practitioners in the USA, and found that those who received exercise advice participated in significantly greater amounts of physical activity per week (108.67 minutes) than those who did not receive any advice (23.70 minutes) ($P<0.01$). However, Graham-Clarke and Oldenburg (1994) found no significant differences in energy expenditure between control and experimental groups over a 12- month time period, when testing various methods of giving exercise advice in Australia, although energy expenditure had increased. Likewise, Burton *et al.*, (1995), in a sample of 3097 American adults, found there was no significant difference between control and experimental groups, with regard to increases in physical activity participation.

A study carried out in the UK by Fielder *et al.*, (1995) was a pilot RCT to assess the effectiveness of prescribing exercise and discussed the difficulties encountered

in the process. Participants were randomly allocated into one of three groups; all received verbal advice from GP's. However, two groups received a more intensive intervention including a written exercise prescription (group 2 and 3) and an invitation to the local leisure centre to participate in physical activity (group 3 only). Problems with recruitment to the study meant that response rates were too low to draw conclusive evidence. However, lessons could still be learnt. For example, it was suggested that training primary care practitioners might enable greater knowledge and more support to, and of, the scheme, thereby enhancing referral numbers.

Lewis & Lynch (1993) reported that almost 93% agreed or strongly agreed with the statement "*If my Doctor advised me to exercise, I would follow his/her advice*". Finch (1997), found that those in the over 50's age group agreed that advice coming from an authoritative person, such as a GP, would be appropriate for them. Furthermore, the Behavioural Risk Factor Surveillance System (1997) reported that 42% of adult respondents had received physical activity advice from a clinician and approximately three quarters had gone on to increase their physical activity levels (Damush *et al.*, 1999; Morbidity and Mortality Weekly Report (MMWR), 1999). Of those who were not given advice, only half the patients increased activity levels. However, within this document, there are no reports on actual increases in levels of physical activity. Therefore, it is inconclusive whether health was improved through this intervention. Halbert *et al.* (2000) reported that individualised counselling in primary care in Australia significantly increased both intention to exercise ($p<0.05$) and exercise time ($p<0.05$). Thus, physical activity advice from health professionals appears to be respected and has also shown some increases in physical activity levels.

Harland *et al.* (1999) attempted to evaluate three methods of promoting physical activity in general practice. The three interventions included were classed as brief (one interview), intensive (six intensive interviews over a 12 week period), and motivational (interview methods based on the Stages of Change model, with or without financial incentive). In addition, there was a control group with none of the above. Outcomes were measured by level of physical activity and results indicated that the motivational method had the most effect on physical activity

levels, with a 55% increase at 12 weeks. However, these increases were not maintained at 1 year. In addition, the most intense intervention i.e. the motivational method with financial aid was most advantageous in promoting adherence, although even this intervention did not promote long-term adherence.

Similarly, Smith *et al.*, (2000) carried out a controlled trial and concluded that short-term (6-10 weeks) increases in physical activity, of at least 60 minutes per week, could be achieved through a physical activity prescription, in addition to written materials. A prescription by a general practitioner alone was found to be ineffective. Thus, it seems that the more intense interventions are more successful at achieving increases in exercise behaviour, although even these increases are only short term.

Previous findings have suggested that health professionals own health behaviours have a significant impact on patients' behaviours (Wells *et al.*, 1984; Frank *et al.*, 1995, Harsha *et al.*, 1996). McKenna *et al.* (1998) found 69% of GP's and Practice Nurses to regularly promote physical activity to their patients and reported the strongest significant predictor of physical activity promotion to be the personal physical activity level of the health professional ($P<0.01$).

Eden *et al.*, (1999) conducted a review of eight trials in the USA and reported inconclusive evidence for the use of counselling in a primary care setting for increasing physical activity levels. Seven of the eight trials identified were RCT, the negatives of which for community based studies are discussed in the NQAF for ERS (2001). However, some interesting information can be sought and implemented from this review. For example, a US study suggested that women seem to need interventions that are more intensive (more time and contact with a clinician) to become physically active (JAMA, 2001).

More recently, in a review of physical activity interventions, Hillsdon *et al* (2004) concluded that brief advice from a doctor, along with written advice, was capable of producing short term increases in physical activity levels over 6 to 12 weeks. However, referral to an exercise specialist, based in the community, was able to produce longer term increases in activity levels over 8 months. Furthermore, those

interventions that concentrated on one form of behaviour change, for example physical activity of a moderate intensity, were most effective. In older people of 50+ years, evidence was available for the use of theories of behaviour change and this was found to be prolific for physical activity promotion. Lastly, interventions in which contact continued between participant and exercise specialist were reported to enhance adherence to the new behaviour.

Graham *et al.*, (2004) examined the role of health professionals in the exercise referral process. The research highlighted the barriers health professionals face in the promotion of physical activity to patients, including lack of knowledge, fear of legal implications if something went wrong, limitations of time and patient feedback, and finally, beliefs about responsibility for health behaviours. McKay *et al.*, (2003) also highlighted the need for increases in health professionals' knowledge and experience about exercise behaviours. However, this notion would only come about through increased time allocation for patient and doctor consultations, and by having a network of suitably qualified exercise professionals to whom the health professionals could refer their patients.

The more recent diversity in referring health professionals may help to combat some of the barriers associated with GP referral, such as lack of time and lack of incentives. For example, Practice Nurses feel that they have more time to spend with patients and may, therefore, have more of an influence upon their behaviour modifications (Graham, 2004). More importantly, it has been reported that practice nurses have more training in physical activity promotion (mean 15.1 hours) than GP's (mean 10.6 hours) (McKenna *et al.*, 1998) and thus, theoretically, are more skilled in giving correct advice to patients. Lastly, Balde *et al.* (2003) recommended that GP's should be trained and qualified to give personalised information regarding physical activity and provide information on local exercise facilities along with personal prescriptions.

In 2003, the Department of Health published the GP contract, the purpose of which was to reward family doctors based on the quality of care they provide for patients, rather than simply the numbers of patients they treat in an aim to improve health care. Moreover, GP practices are able to earn more income for

delivering better care in key target areas including coronary care and mental health and therefore works alongside the National Service Frameworks for CHD (DoH, 2000) and Mental Health (DoH, 2003). As a component of the GP contract, the Quality and Outcomes Framework (DoH, 2004) instructs on data collection and interpretation. However, although associated risk factors such as smoking and hypertension are documented for the QOF, physical activity measurement is not. Referrals to an ERS could be included in this as an incentive to greater promotion. In addition, training is an essential component of the GP contract and therefore fits nicely with the concept of increased training for GP on physical activity promotion. Considering physical inactivity is one of the most significant risk factors for coronary heart disease, it is surprising that promotion of physical activity is not included within this point system.

1.3.3 The role of an ERS within Primary Care

One of many methods to increase physical activity within primary care is ERS. An ERS relies on an alliance between clinical and leisure settings, who work in partnership to achieve local increases in physical activity levels for disease prevention and health promotion. Their aim is to offer supervised, appropriate group exercise for individuals, who can benefit physiologically and psychologically from increasing their levels of physical activity (NQAF, 2001a).

Within the UK, a typical ERS would require referral of a suitable patient to a physical activity programme, designed specifically for their needs. This would take place in a gym, leisure centre or hospital, equipped with the necessary equipment and qualified staff (Gidlow *et al.*, 2005).

The rationale behind ERS's is practical; firstly, around 78% of the UK population will consult their general practitioner at least once a year (Health Education Authority, 1994). Secondly, medical practitioners have a significant influence on the health behaviours of their patients for smoking (Russell *et al.*, 1979; Wells *et al.*, 1984) and other lifestyle behaviours such as dietary fat intake (Steptoe *et al.*, 1999). Thus it presents as an ideal opportunity for health professionals to try making a positive impact on the health of their patients through physical activity

(NQAF for ERS, 2001). Finally, it was estimated that only one in four adult patients who visit a GP are taking sufficient exercise to comply with recommendations (NQAF, 2001).

Although there is some variation between ERS protocols, the main discrepancies between ERS's and other approaches to promote physical activity lie with the fact that an individual is referred from a health professional. Moreover, they are referred to an exercise professional for a structured physical activity intervention following assessment and their progress in monitored. Although an individual is able to 'self refer' within some ERS's, they must still consult a health professional prior to joining. Secondly, and perhaps more significantly, is that those referred onto an ERS are expected to be sedentary and are either experiencing or at risk of ill health. For those individuals who have a clinical condition, physical activity may become even more challenging, due to additional health risks, disabilities and possible reductions in mobility. Moreover, it is likely that a significant proportion of this population are going to be older, thus generating a further set of complications. Therefore, it is always going to be a greater challenge to those working within health promotion to encourage clinical populations to become physically active.

In more recent years, 'GP ERS's' have widened to encompass referral by several health professionals and are more commonly known as 'exercise on prescription' or 'ERS's', thus permitting a diversity of health professionals to refer patients. It is now common for practice nurses, physiotherapists, consultants, cardiac and diabetic nurses and others to refer patients onto a prescribed exercise programme. Research at Edinburgh University identified trends in referring professionals and reported that 20% of UK schemes had no referrals from GPs. This further gives credence for the necessity to shift towards 'ERS's' with a broader referral base (Wright Foundation, 2003).

Following the publication of the National Quality Assurance Framework for ERS's (NQAF for ERS), (DoH, 2001a) (discussed below), and the support received from national bodies and government, ERS's have expanded rapidly. A review by Biddle *et al.*, (1994) identified 121 schemes in the UK; in 1996, a

directory of GP-referral schemes reported that there were at least 200 UK schemes (Chapman, 1996). Since then, a further study on GP-referral schemes has showed significant proliferation in the numbers of schemes that are running in the UK, totalling 816 (The Wright Foundation, 2003).

More recently, Wanless (2002) reported that, in 2002, there were expected to be 250 million GP visits in England, and from this, 500 million GP prescriptions. Conversely, it has been reported that only 1% of a GP's patients will be involved in an ERS (Hunt & Hillsdon, 1996). In theory, if all primary care sites were able to refer to an ERS, this could equate to 5 million referrals throughout the UK, which could generate a possibility of 5 million more active people in the UK. However, the schemes would not currently have the capacity to meet these targets due to limitations in staffing and inadequate funding.

1.4 The National Quality Assurance Framework for ERS's

Following the obvious need for interventions to increase physical activity levels, the Department of Health (2001a) published the NQAF for ERS to '*promote good practice nationally'* (p.5). The publication of a national document, specifically for ERS's (2001), encouraged their proliferation and highlighted the need for evidence based interventions. The benefits of exercise referral within primary health care, guidance on developing ERS's in the community and methods of evaluation were paramount to the publication. It also brought about health partnerships, such as those forged between public health, health promotion, academic and exercise specialists, as an excellent example of multi-agency working. More specifically, the NQAF for ERS (section E) provided guidelines for audit and evaluation, which stressed the importance of every intervention having audit data, and the need to review the suitability of patient selection and exercise prescriptions over long time periods.

1.5 Evidence of effectiveness of ERS's

A search of major electronic databases (Science Direct, Ingenta Connect and Medline) was carried out to identify studies which particularly investigated

primary care ERS (according to description on page 17) in the UK from 1980 to 2005. In addition, known researchers and authors in the field were contacted via email to determine if they had information on forthcoming papers. Search terms used included: 'exercise referral schemes*', 'physical activity referral schemes*', and 'physical activity*'. Studies were excluded if they were not UK based and did not refer an individual to an exercise specialist within a formalised process. Studies were not eliminated due to length of intervention and clinical diagnosis of patient. In addition, included studies have been published and are relevant to an adult population and are therefore relevant to this study.

Despite the large number of primary care physical activity schemes running within the UK, and the number of published research studies relating to physical activity promotion in primary care, there is surprisingly little evidence specifically about ERS's effectiveness. To date, 16 studies and 17 articles have exclusively identified ERS's using the criteria (pp20-24) (3 experimental /3 quasi experimental / 9 qualitative / 1 review/1 case study). This modest amount of research implies that many schemes are not underpinned by an evidenced based model. In fact, it appears that new schemes seem to be replicating current protocols, regardless of the fact that they may not be effective. Interestingly, since the publication of NQAS for ERS's in 2001, 14 of the 17 identified publications have been presented, possibly due to its emphasis on evaluation as one of the key guidelines (section E).

The purpose of this review was to inform this research project and it is acknowledged that there are limitations of this review. These include the restriction to 3 electronic databases, not including data outside of the UK and using only research which has been published (due to publication bias) (Elwood, 1998). Alternative reviews have been carried out using different criteria, therefore, further related publications can be found in Riddoch et al, 1998; Hillsdon et al, 2004; Morgan, 2005; Gidlow et al., 2005 and NICE, 2006.

Table 1 shows the literature, categorised by hierarchy of evidence (Elwood, 1998).

TEXT BOUND INTO THE SPINE

Male (M), Female (F)

Study	Population	Interventions	Outcomes	Conclusions
Experimental (N=3)				
Taylor *et al.* 1998 (Eastbourne).	M+F, age (40-70yrs), Practice register used to identify smokers/hypertensive/BMI>25 & sent invitation letter from GP, from two health centres. Excluded previous MI/angina/diabetes/restrictive musculoskeletal condition/previous scheme attenders (Contract did not allow high risk referrals). 142 of 345 invited were randomised (42%). Did not exclude anyone based on existing physical activity	All had baseline assessments at a health centre and given Health Education Authority CHD leaflets. (1) (n=97)Given 'prescription' and asked to enrol on Exercise Referral at leisure centre, of 10 wk programme, with 20 heavily subsidised sessions. Supervision available if requested. Initial, mid and exit consultation. Control (n= 45) no further intervention apart from follow-up assessments.	All assessed in person, at interim and final assessment, wks 8, 16, 26 & 37.	Apart from week 8, no significant differences in terms of time spent per week doing moderate activity. Wk 8, (247 vs 145 min/wk, p=0.02; wk 16, 226 vs 160; Wk 26, 183 vs 206; wk, 37 158 vs 162.
Harrison *et al.* (2004) (Bolton)	545 M + F participants who were sedentary with CHD risk factors	RCT. Referral to ERS and written information or written information only.	Uptake of physical activity (at least 90 mins/week) 6 and 12 months post referral	Significant increases in physical activity at 6 months, non significant increases at 12 months.
Taylor & Fox, 2005 (Eastbourne)	142 M + F participants age 40-70 years	RCT. Randomised to exercise or control group and assessed at 16 and 37 weeks.	Physical self perception profile. Fitness, physical activity, body mass index, skin folds and waist to hip ratio.	Greater physical self-worth, physical condition, and physical health were identified in the exercise group at 16 and 37 weeks. Changes in anthropometric measures and adherence to the 10-week exercise program were related to changes in all PSPP scales at baseline and 37 weeks but not to changes in sub maximal fitness parameters.
Quasi-experimental (N=3)				
Lord & Green. 1995 (Stockport)	M+F, age (35-65yrs). Recruited through CHD screening.	Self completed questionnaires at initial, 10 weeks and 6 months. 3 focus groups (N=27), 2 with attenders and 1 with non attenders Semi structured interviews with GP's (N=6)	Compliance. Reason for relapse, health improvements, GHQ.	252/419 (60%) compliance rates. 6 month compliance was greatest for 55yrs+, females and those referred for fitness. At 10 wks, decreases in GHQ score and increases in physical health of individuals.

Male (M), Female (F)

Study	Population	Interventions	Outcomes	Conclusions
Dugdill *et al.* 2005 (Northwest England)	Data from 2 large scale evaluation studies (N=1600)	Case Study, focus groups, interviews and survey questionnaires.	Adherence and non attendance to ERS, Physiological changes, referring practioner, long term physical activity levels.	Approximate adherence 35-45%. Referral of females was greater. Overweight was a popular referral reason. More males and older participants completed the intervention. MI patients were twice as likely to adhere as mental health patients. 18-30 yrs are more likely to not attend; 61-70ys are most likely to attend. Systolic and diastolic reductions in BP over a 14week intervention. Greatest referrals were from GP's, Practice Nurses and Cardiac Rehabilitation. Adherence rates were from patients referred by Cardiac Rehabilitation. Moderate increases in physical activity at 12 months were identified.
Harrison *et al.* (2005) (Wigan)	6610 individuals referred to an ERS.	Analysis of prospectively collected data over 5-year period from 125 general practices.	Referral rates. Practioner and patient characteristics on access to the scheme.	4% of sedentary population were referred. 79% attendance at initial assessment, significant by age and reason for referral. Younger and older age ranges least likely to attend, those referred for fitness or mental health were most likely to attend.
Qualitative research (N=9)				
Crone-Grant & Smith (1999)	M + F, age (30-65 yrs) attending ERS	2 semi-structured focus groups held pre (N=5) and post (N=3) intervention	Physiological and psychological experiences	Themes related to apprehensions, anticipation, self-consciousness, confidence pre intervention. Post intervention themes included Social support, perceived benefits and complexity of attending.
Crone-Grant & Smith (2001)	Participants referred to an ERS in the public or private sector.	Semi-structured interviews pre (n=10) and post (n=8) intervention.		Themes related to concerns about using the equipment in the facilities, improvements in medical conditions and social interaction pre intervention. Post intervention, public sector participants expressed feelings of self-conciseness's within the gym environment Public sector participants had more positive attitudes towards attendance at an ERS. Social support and competence were highlighted as important for participants engaging in an ERS.

Male (M), Female (F)

Study	Population	Interventions	Outcomes	Conclusions
Hardcastle & Taylor. 2001 (Halisham)	15 Females aged 50-80years	Unstructured interviews at initial, 5 and 10 weeks.	Informal networks and processes of referral; perceptions of control and accountability; sources of belief regarding exercise, life stages and support networks; social support in the gym environment and ageism and social norms.	Some felt accountability to their GP and expected their health professional to refer them. However few health professionals had suggested it. Gender role was important as some felt guilty for being away from the family unit. Social inclusion was a beneficial factor of participation. Social support was less important once confidence was built.
Stathi *et al.* (2003) (South west England)	13 M + F aged 63-79 years participating in an ERS	Individual or group semi-structured interviews	Elements of successful aging and well-being The contribution of the exercise referral programme Specific issues related to the experience of participating in an exercise programme	Improvements in physical, medical and functional features e.g. stronger, memory, coping, memory. Improved sleep, moods, well-being, stress levels, social network. Need for enjoyment, confidence and support to exercise.
Crone *et al* (2004) (Somerset)	ERS protocol	Case study of ERS protocol for good practice.		The ERS includes a central referral mechanism (CRM) database, a management team, workshops for exercise professionals and bi-monthly newsletters for leisure providers and Somerset Physical Activity Group (SPAG) members.
Graham *et al.* (2004) (Merseyside)	GP's (N=71) for quantitative GP's (N=9) and Practice nurses (N=2) 9 of whom referred patients to the ERS	Postal questionnaire to 144 GP's over 52 practices. Semi structured interviews with 9 GP's and 2 Practice Nurses	Referral services used, barriers to referral, role in promotion of physical activity, choosing clients for referral	Smoking cessation was the most popular referral service. Barrier to referral was due to medico-legal responsibility for referral, time and lack of patient feedback. Referral protocols differed throughout the area. Health professionals considered their advice important in the promotion of physical activity.
Crone-Grant *et al* (2005)	18 participants, M=5, F=13, mean age 55.5 years	Pre and post ERS focus groups and interviews with purposively sampled individuals from 3 types of ERS (leisure centre, private club and hiking scheme).	Psychological experiences of participants on an ERS	Themes of importance included social support, self acceptance, social networks, culture, environments, role playing, coping, sense of belonging, purposefulness and physical health.

Figure 1-Uk studies in ERS

Male (M), Female (F)

Study	Population	Interventions	Outcomes	Conclusions
Wormald & Ingle. (2005) (Yorkshire)	30 (10 males/20 females) individuals referred to an ERS and had attended at least one exercise session.	Qualitative focus groups (N=6)	Experiences of referral process and the ERS, perceived effects of the ERS, choice of activities offered and methods of improving the scheme.	Positive response for ERS. Improved benefits included self confidence, wellbeing, quality of life and increased physical activity participation. Support from the ERS and like participants was important for attendance. Negative aspects included lack of knowledge by referring health professionals, intimidating gym environment, and lack of social interaction.
Hardcastle & Taylor (2005)	15 females, age 43-77yrs. Data reported from 8 females.	Semi-structured repeated interviews over a 10 week ERS intervention.	Changes in exercise cognitions over time during participation in an ERS.	Exercise identity changed over time bringing about feelings of empowerment and well being. Feelings of achievement, control, sense of belonging and social interaction were identified. Traditional Female priorities changed over time.

Case Studies and reviews (N=2)				
Gidlow *et al.* (2005) (UK)	UK based participants referred to an exercise professional through primary care referral.	Systematic review of existing ERS evaluations (N=5) and RCT's (N=4) within the UK.	Attendance, client attendance. Drop out	Uptake of referral varied between 23 and 86%. Attendance was between 12 and 56%. Participant characteristics are poorly reported. Increased physical activity levels, part-time work and reason for referral were associated with higher attendance. 55% of studies offered ERS for little or no cost. Reasons for non attendance included, illness or injury, lack of time, work pressure, not wanting to attend alone, transport problems and holiday periods interrupting attendance. Supportiveness of staff and appropriateness of programmes were important to those who did not complete the ERS. Regular follow-up, promotion of moderate intensity exercise and walking, individual interventions, enthusiasm of staff and low cost were important to increase attendance.

Male (M), Female (F)

Study	Population	Interventions	Outcomes	Conclusions
Johnston *et al.* (2005) (Somerset)	458 individuals who were not eligible for participation on an ERS	Content analysis of reason for non eligibility for ERS participation. Inductive analysis of common themes of non eligibility.	Reasons for non attendance through a centralised referral mechanism (CRM)	Reasons for non attendance included 'medical reasons' (N=135), 'already active' (N=280), 'not ready for exercise' (N=74) and 'psychosocial reasons' (N=41). Overweight/obese, musculoskeletal individuals and females were more likely to be removed for psychosocial reasons. Those referred with cardiac conditions and elder individuals were more likely to be removed for medical reasons.

1.5.1 Quantitative evidence of ERS's

ERS evaluation tends to place emphasis on the number of participants who complete the process and on physiological outcomes. Adherence rates have been reported between 18% (Lord and Green, 1995) and 87% (Taylor *et al.*, 1998). More recently, adherence estimates over the schemes' time frame (usually 12-14 weeks) fall between 34% and 46% (Dugdill *et al.*, 2005). At 6 months, Harrison *et al.*, (2004) reported 18% of those referred were maintaining at least 90 minutes of physical activity per week, and this increased to 23% and 33% at 9 and 12 months respectively. Gidlow *et al.*, (2005) reported adherence rates of 23% to 86% in a review of previously published data. Although it is difficult to compare these figures, due to the variance in physical activity intervention and research protocols, it provides a learning tool for those interested in physical activity promotion. Thus, studies within the UK have shown varying levels of success with adherence, compliance and physiological adaptations within primary care ERS's.

Taylor *et al.* (1998) examined the effects of a GP exercise referral programme on modifiable coronary heart disease risk factors (smoking, BP and overweight). They found that ERS's were able to make short-term (16 weeks) changes to exercise levels. They randomised subjects into one of two groups, both of which received preventative leaflets. In addition, the intervention group received exercise advice and half price admission to a local leisure centre. Validated measures of energy expenditure, blood pressure, body weight and body mass index, skin folds and waist-hip ratio were taken at 0, 8, 16, 26 and 37 weeks. A questionnaire was used to gather data on minutes spent doing moderate and vigorous activity in the past week and number of visits to the GP over the last year. Results showed increases in vigorous activity in the intervention group at 8 (49 mins/week), 16 (59 mins/week) and 26 weeks (56 mins/week), although this returned to baseline at 37 weeks (42 mins/week). Interestingly, moderate physical activity levels reduced prior to the end of intervention (8 weeks) to 37 weeks, by a mean of 9 mins/week in the intervention group and increased by 12 mins/week in the control group. The exercise group reduced sum of skin folds by 8.1% more than the control group, in conjunction with reductions in systolic blood pressure

of 7.2% more than low adherers. An anecdotal outcome of ERS's relating to reductions in visits to health professionals, due to increases in health, was not observed in this study. There was no difference between the exercise and control group regarding visits to the GP over the preceding year. Overall, this study indicates that an ERS shows short term success in increasing vigorous (26 weeks) and moderate (8 weeks) physical activity (37 weeks) for high adheres when compared to low adherers. A secondary publication from this research (Taylor and Fox, 2005) reported on physical self-perceptions as an outcome. However, the impact of changes in anthropometric measurements, fitness and intervention adherence on physical self-perceptions was also identified. It was reported that physical self-worth, physical condition and physical health increased significantly ($p<0.05$) more in the exercise group than the control group. Furthermore, physical self perceptions ('embarrassed by their bodies when it comes to wearing few clothes' and 'unease in fitness and exercise settings') were significant in logistic regression analysis by control or exercise group over time (0, 16 and 37 weeks). Participation in an ERS also increased 'confidence in the physical side of themselves' ($p<0.05$), 'levels of stamina and fitness' ($p<0.001$) and 'confidence in level of physical health' ($p<0.01$). Lastly, changes in anthropometric measurements over time brought about improvements in physical self perceptions. The authors were satisfied that an ERS encouraged increases in physical self-perceptions and as a result, stressed the importance of identifying psychological outcomes of ERS participation rather than previous physiological outcomes. Although this research was the first to track longer term outcomes as a result of participation in an ERS, the follow up time was relatively short (37 weeks). In addition, the clinical diagnosis restrictions which are limited to smokers, overweight and those with hypertension, limit the outcomes of this research to general ERS.

A longer term (12 months) experimental study was carried out by Harrison *et al.*, (2004) using a RCT to determine the impact of being referred to an ERS in addition to written information, compared to written information alone on levels of physical activity. Results showed significantly greater numbers of physically active people in the intervention group than the control group at 6 months ($p<0.05$) (22.6% and 13.6%). However, this was not significant at 12 months

($p>0.05$) (25.8% and 20.4%). From this, the authors concluded that ERS's are capable of increasing short term physical activity levels compared to written advice alone. However, more intense interventions and support might be needed to increase the numbers who are physically active long-term. A physically active individual was one participating in at least 90 minutes of moderate/vigorous physical activity per week. Although this does not reach the national recommendations (DoH, 2004), it is still considered a large increase considering individuals were sedentary at commencement of the intervention. Greater improvements would have been identified if the physical activity cut off point was more realistic; this could even have included 90 minutes of mild to moderate activity.

Lord and Green (1995) carried out a pre and post-test evaluation on an ERS in the North West of England. They concentrated on patterns of compliance, reasons for relapse and change in physical and mental health with pre- and post-intervention (10 weeks) and 6 months questionnaire follow-ups. In addition, focus groups and semi-structured interviews were carried out with GP's and participants. Although compliance rates to exercise referral were poor (60% and 18.4% at pre- and post-intervention respectively, and 15.3% at 6 months), positive changes in physical and mental health were reported post-intervention for those who adhered (24% reported their health in positive terms, as well as a 75% increase in GHQ score post- intervention). The authors suggested that methods of increasing compliance were needed in an attempt to eliminate the poor adherence rates. Proposals for this included avoiding changing exercise instructors, not breaking for holidays (particularly the long summer holidays) and having exercise sessions available for all ages and abilities to target groups less likely to adhere. In addition, increasing the emphasis on social events to encourage friendships, and charging participants a small fee on each occasion, to reduce the impact of transferring to the full costs after the prescribed scheme period had ended were found to be important to those who took part in the scheme.

Dugdill *et al.*, (2005) reported noteworthy differences between participants when data from two ERS's in the North West of England including comparisons between gender, age, referral reason and referring health professional were

compared. For example, it was apparent that referrals from Practice Nurses and Cardiac Rehabilitation Nurses produce higher adherence rates (45% and 57% respectively) than those from GP's (32%). In addition, primary referral reasons were analysed; highest retention rates were for those who were referred 'post myocardial infarct' (61%), with lowest being those referred for 'mental illness' (33%). This highlighted the need for process evaluation and accentuated the need for ERS's that are individualistic in both protocol and their specific participant referrals. Small increases in physical activity levels over a 12-month period were documented using self-recorded measures, and a mean increase of 21 minutes of moderate physical activity per week was reported. As a consequence of these findings, the authors discussed lack of previous evaluation, the principal evaluation methodologies vital for use within ERS's and how through evaluation, improvements to the schemes can be endorsed. As with other pre and post test analysis, problems associated with compliance and recruitment reduced numbers for whom information was available at the 12 month time point. The contribution of this publication is its emphasis on evaluation of ERS to determine future successes. This is vital if ERS is to be truly understood as a method of increasing physical activity in a community setting.

Lastly, Harrison *et al* (2005) identified the characteristics of participants referred to, and attending, an ERS in the North West of England over a 5-year period (N=6610). The purpose of the study was to identify the impact an ERS could have upon a population, to assess their worthiness as a physical activity promotion intervention. 79% of patients referred from 125 general practices attended the initial assessment with an exercise referral officer. Those who were most likely to attend had been referred for 'mental health' or 'fitness' and those least likely to attend were in the youngest (18-24 years) or oldest (75+years) age groups. The authors estimated that, because only 4% of the 'at risk' population were referred, they were not an effective method of increasing physical activity, particularly for younger and older adults. This is the study with the largest sample to date and has identified the considerable numbers of individuals who do not attend an ERS. However, rather than suggesting improvements to the referral process, it just dismissed ERS as a poor method of increasing physical activity. This opposes Dugdill *et al*,. 2005 recommendations for evaluation of the process of ERS to

establish their effectiveness and identifying qualitative outcomes as opposed to quantitative.

Similar to Harrison *et al., 2005*, Johnston *et al.*, (2005) identified inappropriate referrals made to a UK based ERS over a 28 month period (N=458). Unsuitable participants included those with a contraindicating medical condition (N=135), individuals who perceived themselves 'already active' (N=280), those 'not ready for exercise' (N=74) and 'psychosocial reasons' (N=41), including transport, cost, anxiety about exercising and family ties. Overweight/obese, musculoskeletal individuals ($p<0.01$) and females ($p<0.01$) were significantly more likely to be removed for psychosocial reasons. Those referred with cardiac conditions ($p<0.01$) and older ($p<0.01$) individuals were more likely to be removed for medical reasons. The authors commented that referring health professionals were referring inappropriate individuals, despite being given information about suitable referrals, and therefore greater training was required. This relates to the NQAF (2001) recommendations for the need for national guidelines for GP's to be simple and it appears that they are still not explanatory enough. Recommendations were made that ERS employ a suitably qualified exercise professional to work within primary care to initiate behaviour change methods and provide greater support for exercise behaviours, particularly for overweight and obese individuals. Together, Harrison (2005) and Johnston's (2005) research highlights the importance of the referral process onto an ERS. Further investigation into this referral process will enhance the referral process encouraging more individuals to attend the ERS.

1.5.2 Qualitative evidence of ERS's

The first qualitative study in ERS was carried out by Crone-Grant and Smith (1999). Multi method focus groups were completed with participants on a scheme, pre- (N=5) and post (N=3) intervention. They found themes around confidence and self-consciousness were important pre-intervention whereas perceived benefits of participation, in spite of difficulties with technological and scheme protocols, were of importance post intervention. Social Support for participants was important both pre- and post- intervention. Although this adds to the

knowledge of ERS, the sample was small and the age group was vast (30-65 years) thus it gives us unspecific information about participants on an ERS allowing improvements in ERS process. More specific age groups or gender splits would have been advantageous to guide the ERS process.

Hardcastle and Taylor's (2001) qualitative enquiry allowed them to offer an insight, additional to that provided by Crone-Grant and Smith (1999) into factors that encourage an individual to participate in an ERS. These themes came under the headings of informal networks and process of referral, perceptions of control and accountability, sources of beliefs regarding exercise, life stages and support networks, social support in the gym environment, and ageism and social networks. The outcomes of the research emphasised the impact of significant others, including friends and health professionals, for exercise behaviour, along with the perceived role of gender and age groups. Social support was indicated as vital to the exercise behaviour, particularly in the early stages. A most interesting outcome of the study related to referral onto the ERS, whereby over 80% of the sample had initiated referral with their GP. This highlights problems with the referral process and links back to other publications which emphasise the need for training for health professionals (Harrison *et al.*, 2005 and Johnston *et al.*, 2005).

Further qualitative analysis was carried out by Crone-Grant and Smith (2001), with participants referred to private and public sector ERS's. Semi-structured focus groups were carried out pre (N=10) and post intervention (N=8). Findings revealed participants' concern for using the equipment in the facilities, hopes of medical improvements and social interaction. Post intervention, public sector participants expressed feelings of self-consciousness within the gym environment, whereas public sector participants had more positive attitudes towards attendance at an ERS. Social support and competence were highlighted as important for participants engaging in an ERS. This study adds an interesting concept to ERS due to there being difference experiences between participants who attend an ERS at a private and a public establishment. Further research could establish whether this is due to the treatment participants receive during attendance of the public or private centres or other physiological and physiological factors.

Stathi *et al.* (2003) held semi-structured interviews with older adults (63-79 years), who were participating in an ERS in southwest England. The outcomes provided non-quantitative benefits of the schemes, such as the impact of the GP's advice on participation and how this motivates participants to continue. The exercise type and requests for alternative non-structured forms, along with the reassurance that they are exercising in a safe environment that makes them adhere to the scheme, are other examples. Participants were reported to move from a dislike of the exercise intervention "*I hated it in the beginning because I was not used to being with men in a place like that*" to "*But now I just ignore them because I have more confidence. I feel sorry about people who do not persevere with it because after the first four weeks you feel that you have more control*" several weeks later. The choice of this age group is important to ERS as it is specific to an age range in which there is variation in referral numbers (participants are likely to be referred (61-70 years) and also likely to not be referred (71+)) (Dugdill *et al.*, 2005). It would be interesting therefore to achieve a breakdown in these age ranges to determine differences between the two groups.

Crone-Grant (2005) held focus groups (N=3) and interviews (N=3) with purposively sampled individuals on an ERS, pre (N=3) and post (N=3) intervention, to determine psychological benefits of participating in an ERS. Participants were recruited from three different ERS's, one based in a leisure centre, the second in a private health club and the third in a leisure centre- based hiking scheme. Questions related to the participants' positive and negative experiences of an ERS, perceptions of the exercise staff and factors that influence their experiences during an ERS. The authors reported that factors of importance to participants included self acceptance, social support and networking, and the culture and environment in which the ERS is set. On the basis of this, they designed a conceptual framework to explain the relationship between these concepts and positive mental health as a result of participation on an ERS. This study highlighted the need for ERS to be seen as more than a tool to increase physical activity and meet physiological measures. However, it would have been advantageous to compare the experiences between referral programmes, rather than pre and post intervention only, to determine the most prolific ERS.

Unlike previous qualitative studies, Wormald & Ingle (2005), carried out focus groups (N=6) with mixed gender (10 male/20 female) groups. Outcomes were generally positive and included increased self confidence, wellbeing and quality of life. Moreover, participants felt they had increased physical activity participation. Support from the ERS and like participants was important for attendance. Therefore, the authors recommended that home based ERS should not be encouraged. Furthermore, greater support was required for those with more serious conditions, in particular participants referred for mental health. Negative aspects included lack of knowledge by referring health professionals, whereby participants had to ask about being referred and inform health professionals on the ERS. In addition, intimidating gym environment and lack of social interaction was negative to participant attendance. The authors recommend that within the ERS it is important to maintain staff continuity, increase support from exercise professionals and other participants, and alter exercise times and choice to allow greater participation. Furthermore, that health professionals' training is increased, and ERS develop multi agency working to increase promotion within primary care trusts. This is consistent with previous research in primary care physical activity promotion, emphasising the importance of referring health professionals on patient exercise behaviours (Wells *et al.*, 1984; Lewis and Lynch, 1993; Frank *et al.*, 1995; Harsha *et al.*, 1996; Finch, 1997; McKenna *et al.* 1998; Damush *et al.*, 1999; Halbert *et al.* 2000; Smith *et al.*, 2000 and Hillsdon *et al.*, 2004) and therefore the need for increased training (McKay *et al.*, 2003 and Graham *et al.*, 2005).

Lastly, Hardcastle and Taylor, (2005) carried out semi-structured, repeated (0, 5 and 10 weeks) interviews to recognise changes in exercise identity during participation of an ERS. Although data from only 8 participants was reported, it was apparent that whilst individuals did not have an exercise identity initially, through participation in an ERS, this exercise identity strengthened. This encouraged feelings of empowerment and well being, and a greater sense of control and belonging in other aspects of their lives. The notion of tracking interviews throughout the intervention provides an insight to changes in perceptions. This is important to allow development of the ERS process to

produce one which is conducive to participants obtaining an exercise identity and therefore encouraging exercise participation.

1.5.3 Alternative methodological design in ERS evaluation

Crone *et al* (2004) carried out a case study, relaying the practise of an ERS in the UK as an example of good practice. The ERS includes a central referral mechanism database (CRM), a management team, workshops for exercise professionals and bi-monthly newsletters for leisure providers and Somerset Physical Activity Group (SPAG) members. Suggestions were made that these practices were integrated into other ERS's in the UK, following research into their successfulness. Furthermore, it was proposed that a steering group is formed to oversee the infrastructure and a quality assurance framework of ERS in the UK.

Gidlow *et al* (2005) carried out the first systematic review of previous UK primary care ERS publications (N=9). ERS protocol generally involved assessment with an exercise professional, prior to referral onto the scheme. Encouragement to attend between 2-3 exercise sessions per week (where specified), over a 10- 14 week intervention, was given. Reported uptake of referral was between 23 and 86%, and attendance rates fell between 12 and 56%. Participant characteristics were poorly reported, although higher attendance was associated with increased physical activity levels, part-time work and reason for referral. Reasons for non attendance included illness or injury, lack of time, work pressure, not wanting to attend alone, transport problems and holiday periods interrupting attendance. Supportiveness of staff and appropriateness of programmes were important to those who did not complete the ERS. Regular follow-up, promotion of moderate intensity exercises and walking, individual interventions, enthusiasm of staff and low cost were important to increase attendance. 55% of studies offered ERS for little or no cost. The authors recommended that information was gathered on those who are referred to an ERS, but who fail to attend and this has since been carried out (Harrison *et al*., 2005 and Wormald *et al*., 2005).

In conclusion, quantitative research has provided an analysis of the measurable outcomes that indicate the success of various interventions. Overall, however, the success of these schemes is uncertain, due to increases in physical activity levels being only short-term and the exact increases being vague and thus inconclusive (Riddoch *et al*, 1998). The use of qualitative methodologies has highlighted the importance of the schemes process to participant attendance and completion rates. Allowing this access to the reasoning behind exercise behaviours is one of the key advantages to using qualitative methodologies. One of the many factors said to influence health behaviours is that of Social Support (Crone-Grant & Smith, 1999; Hardcastle & Taylor, 2001) and this will be discussed subsequently.

1.6 Social Support, Health and Well-being

Over 100 years ago, Durkheim (1897/1952) found that suicide rates were greater in those with fewer social associations, and other early researchers, such as Park & Burgesss (1926) found that there were greater behavioural problems in those who moved away from family communities for work. This concept is called 'Social Support' (Cohen *et al*, 2000).

Social Support has been described as;

> '*Any process through which social relationships might promote health and well-being*'
>
> (Cohen *et al*., 2000, p.4)

> '*An exchange of resources perceived by the provider or the recipient to be intended to enhance the well-being of the recipient*'
>
> (Shumaker & Brownell, 1984, p13).

Thus Social Support involves any person who influences an individual to make positive health decisions. This may include family, friends, colleagues, health professionals, media or any other person with whom we have relationships.

Williams *et al* (2004) endeavoured to define Social Support and discovered that previous definitions, although varied, could be categorised into the following notions; timing, relationships and social ties, supportive resources, intentionality of support, impact of support, recognition of support need, perception of support, actual support, satisfaction with support and the characteristics of recipient and provider. However they stated that "we should derive definition from context to ensure fit" and that this can only be done through asking people what social support means to them'.

Social Support can impose positive as well as negative outcomes on health; lack of, or negative support, can lead to an equivalent risk to health as hypertension, obesity and smoking, after controlling for these and other traditional risk factors (House *et al.*, 1998). In contrast, positive support can result in an individual being less likely to have a heart attack (Kaplan *et al.*, 1988) or develop upper respiratory illnesses (Cohen, *et al.*, 1997), and more likely to survive breast cancer (Funch & Marshall, 1983) or increase stability in mental health during breast cancer (Bloom *et al.*, 2001).

Social Support is thought to influence well being through its influence on both mental and physical health (Leslee *et al.*, 2001; Wise & Stake, 2002). When influencing health positively, there are numerous methods by which this may occur. Psychologically, it is proposed that it is due to regulation of responses to situations and coping facilitation (Thoits, 1986) thus reducing stress (Greenwood et al., 1996) through the so called Stress-Buffering Model (Cohen et al, 2000). The link between stress and social support is due to the nature of stress which causes physiological reactions in the endocrine, cardiovascular and immune systems (Bartlett, 1998) and the characteristics of social support which is reported to positively influence the endocrine, cardiovascular and immune systems (Uchino *et al*, 1996). However, research into this area is complex, due to the nature of health and illness, whereby many diseases are apparent long before an individual becomes ill, or an individual may feel ill health long before a disease is diagnosed.

1.6.1 Social Support within diseased populations and its relevance to ERS's

There have been several studies relating Social Support to individuals with chronic illnesses. Brummett *et al* (2001) reported that current Coronary Artery Disease patients, who had three or fewer people in their Social Support network, had a significantly ($p<0.05$) increased risk of mortality and morbidity. A more recent publication (Dickens, 2004) reported the importance of social relationships for reducing the risk of a secondary myocardial infarction. Rutledge *et al*., (2004), with a large sample of American females (N=503), found that the risk of dying of heart disease (diabetes ($p<0.05$), smoking ($p<0.05$), blood glucose levels ($p<0.05$), waist to hip ratio ($p<0.05$) and hypertension ($p<0.05$) was lower for those with larger social circles, when they were followed over 2.3 years.

In addition, it has been found that those who are not responsible for their situation (uncontrollable), such as those who have a genetic predisposition for coronary heart disease (CHD), are more likely to gain greater levels of Social Support than an obese individual who has CHD and is deemed responsible for their own situation (controllable) (Weiner, 1985, 1986). This support is enhanced further if an individual attempts to positively manage their situation e.g. adheres to medical or exercise prescriptions (Schwarzer *et al*., 1992). This therefore, applied within the exercise referral setting, may imply that different conditions and illnesses may deserve enhanced levels of Social Support, in the eyes of the individual's support networks.

One study which looked at this hypothesis, with 84 mixed gender subjects and a variety of controllable and non-controllable diseases, found that those conditions that gained the most pity also gained the most Social Support (Schwazer *et al*., 1992). In conditions such as depression and obesity, most support was given if the suffering individual was endeavouring to control their condition, as opposed to terminal illness, such as cancer and AIDS, in which pity was the most significant determinant of support. It has been suggested that this is because support networks perceive that their supportive efforts will be wasted on an individual who has no intrinsic desire to change their health status (Schwarzer *et al*., 1992).

1.6.2 Differing needs for Social Support within ages and gender

Previous research has indicated that supportive friendships are most important to younger adults and have, in fact, the strongest inverse relationship with depression. This influence is greater than with family for the age group, particularly for those who are single or divorced (McLaughlin *et al.*, 2002). Research has also suggested that females gain emotional and instrumental support from a wider range of sources and people than men (Edelbrock *et al.*, 2001; Suitor & Pillemer, 2002; Fuhrer & Stansfield, 2002) and gain more from these relationships (Elliot, 2001).

In addition, women considered daughters as a great source of support (Edelbrock *et al.*, 2001). However, Henderson *et al.* (2001) found that, even though mothers found they obtained considerable Social Support from siblings and husbands, the family environment also made it difficult for them to have time for physical activity, due to other time constraints. Thus it is apparent that Social Support is required in different forms and quantities at different ages and genders.

1.6.3 Social Support and lifestyle behaviours

There are numerous studies looking at the influence of Social Support for lifestyle behaviours such as alcohol (Mohr *et al.*, 2001) smoking cessation (Lichenstein, 1982; Coppotelli & Orleans, 1985; Stanton and McGee, 1996 and McBride *et al.* 1998) and drug abuse (Gogineni *et al.*, 2001).

Lack of Social Support has been found to be a significant factor in inactivity, and high levels of Social Support are related to greater activity levels (Eyler, *et al.*, 1999; Young *et al.*, 2001). In their model of active living, the Groningen Active Living Model (GALM) (1997) Stevens *et al.* (2000) reported a relationship between levels of Social Support from family and friends and self-efficacy, perceived fitness, and enjoyment (of leisure time activity). This clearly indicated the importance of physical activity research to identify Social Support as a physical inactivity mediator.

More specifically, Hardcastle and Taylor (2001) emphasised the fact that little was known on the psychosocial and social networks that occur as a result of physical activity referral schemes. However, previous UK research by Steptoe *et al.*, (2000) identified psychosocial factors that might predict increases in physical activity in overweight sedentary individuals receiving behavioural counselling in primary care. They reported that Social Support was one of two main predictors of increased physical activity levels at 12-months ($p<0.05$). Social Support was measured by a series of six questions, which related to encouragement and assistance to change from family and others (friends and colleagues). Although these questions did not relate specifically to physical activity, a further question asking if the person most important to them encouraged them to exercise, and did this 'important' person exercise themselves was included. Outcomes indicate that participants who were living with a partner showed smaller increases in physical activity than those who were not living with a partner. In addition, although significant others (partner or close companion) who exercised, was associated with activity levels at baseline, increases in activity at 4 months was predicted by encouragement by friends and co-workers.

On the contrary, Anthony and O'Brien, (2002) found that Social Support had no effect on psychophysical outcomes in a study on 57 college students. However, this was an artificial laboratory environment, whereby the support was not coming from a close relation. Therefore, it is perhaps the relationship with the individual giving the Social Support, as opposed to the actual act of giving support. It could be argued, therefore, that the positive psychological effects which are a result of physical activity participation are due to the social interaction that occurs during the group exercise, as opposed to any physiological alterations.

Finally, it has previously been suggested that Social Support is particularly important in the stage of exercise adoption, and in particular for females (Sallis *et al.*, 1992). A 24-month follow up revealed family and friend support was significant in the adoption of physical activity in women ($P<0.05$) and more so than in physical activity maintenance, or in men. The authors concluded that physical activity interventions that promoted support from family and friends may increase adoption to the health behaviour. Furthermore, social support has been

researched qualitatively within an ERS and has been indicated as important in the adoption of a physically active lifestyle (Crone-Grant & Smith, 1999; 2001; Hardcastle & Taylor, 2001 and Crone-Grant, 2005).

To summarise, there is a necessity to increase the knowledge of Social Support for exercise behaviours. Moreover, there are particular groups of people who, dependant on health status, age and gender, may require different quantities and qualities of Social Support to enhance their exercise compliance. In addition, there may be individuals, who receive additional Social Support, due to the aforementioned factors. Recognising these factors may endorse differing levels and types of support for participants entering an ERS.

1.7.1 Measurement of Social Support for Exercise behaviours

The Social Support for Diet and Exercise Behaviours questionnaire was developed initially by Sallis from in-depth interviews with individuals who were 45 years or younger, had a child between 8 and 16 in the house, and who were attempting to change a diet or exercise behaviour. These subjects fell under differing ethnic backgrounds (unlike the sample population) and were mostly female (4:1) (as the sample population). From these interviews, information on how participants' family and friends had been supportive and unsupportive were uncovered, as well as how these individuals would like to be supported in the future. This formed the basis of the second part of the questionnaire development, in which the draft social support scales were piloted within a different sample group. The exercise section of the questionnaire was validated against a simple physical activity question, which asked, "*Is there any physical activity that you perform at least 20 minutes without stopping, three times a week, which is vigorous enough to make you breathe hard and sweat?*"

The social support questions were validated against The Social Support Questionnaire (Sarason *et al*, 1983), which is a general measure of social support. The validity of the questions was proven. However, all correlations between specific and general social support measures were low and not significant.

1.7.2 Measurement of physical activity

The Godin & Shephard (1985) (LTPAQ) was instigated following the lack of validated questionnaires that are easy to administer within the general population (Godin & Shephard, 1985). Its purpose was to organise individuals into groups, depending on their level of activity in relation to psychosocial variables, before and after the implementation of a community health and exercise promotion programme.

The LTPAQ has shown promising reliability and validity data for adults (Miller *et al*, 1994; Godin and Shephard, 1985 & Godin *et al*, 1986). It is simple to administer, low in cost and specifically designed to measure habitual physical activity in the community (Scerpella *et al*, 2002). Moreover, alternative reliable and valid tools were longer and more complex in nature, requiring more space (within the complete questionnaire), and time. Others were designed for different populations that would not be applicable to this population, the impact of which was displayed by Scerpella *et al*, (2002). They attempted to provide validation of the Godin-Shephard questionnaire in preadolescent females. However, the questionnaire failed to show good estimates of habitual physical activity patterns. Thus using a questionnaire, which has been validated in a population similar to the current population, is paramount. Advantageously, the age range in which the LTPAQ was validated was similar (18-65 years) and the gender split was almost equal, thus giving good general population similarities. Furthermore, it was instigated to identify physical activity patterns in a community sample that was about to engage in a health promotion scheme, thus similar to the sample type in this study.

One of the positives of the questionnaire is its simplicity. However, as a negative, it does not require the individual to give exact details of the time spent doing the activities. Thus, exact levels of leisure time physical activity are compromised. To measure health related physical activity, we need to follow the system of Frequency, Intensity, Type and Time (FITT) (ACSM, 1998). Whilst Godin and Shephard's questionnaire allows us to quantify the first three of these, it does not allow us to comprehend the latter. Although The Centre for Disease Control (Pate

et al., 1995) have advocated shorter more frequent bouts of exercise as conducive to health, the lack of specifics can be very misleading.

1.8 Summary

In summary, being physically active is beneficial for health and health professionals, in particular GP's recommendations, can influence patients. We also know that these schemes are increasing in numbers throughout the UK and are effective methods of increasing short-term physical activity levels for a certain population (Taylor *et al.* (1998). As a result, they are improving both mental and physical health of individuals who complete the schemes (Lord and Green (1995). However, these improvements are only short lived and are only applicable to those who continue to be physically active (DOH, 2004). Research also shows that adherence rates to these schemes are low (Lord and Green, 1995; Harrison *et al.*, 2004; Dugdill *et al.*, 2005 & Gidlow *et al.*, 2005) and therefore a large percentage of people who are referred to these schemes are not changing their lifestyle and becoming physically active.

Thus far, Social Support has been shown to have an influence on cancers, HIV and heart attacks, and it is thought that this is due to support for prevention, or assistance through, the disease. Social Support can encourage healthy behaviours such as physical activity, smoking cessation and withdrawal from drugs for certain subgroups, but the need and type of support varies from each individual.

Methodology

The aim of this chapter is to provide a rationale for the tools utilised to meet the aims of the studies undertaken.

2.1 Overall Aims for Evaluation

Study 1

1. To identify descriptive characteristics of the borough population, the referred population, and those who attend or do not attend an ERS.

Study 2

2. To compare those who attend an ERS with those who complete an ERS.
3. To compare those who complete an ERS, pre- and post- intervention.

Study 3

4. To investigate if an ERS provides an effective method of increasing physical activity levels over a 12 month period and if participant characteristics influence their likelihood of being physically active.

Study 4

5. To explore overweight participants' perceptions relating to their experiences of an ERS.

2.2 Choice of Methodologies

> *'How can we study human nature, as infinitely varied and in constant motion as it is, when we are locked into rigid ways of thinking?'*
>
> Abusabha and Woelfel (2003) p.566.

Evidence suggests that multi-method approaches are beneficial within the evaluation of a health intervention (Daly *et al.*, 1992). In addition, multi-method research design was incorporated in this study, with the prominence of individuals having chronic diseases within this sample population, as suggested by Casebeer and Verhoef (1997). Due to the nature of these conditions, which can be

debilitating over long time periods, experiences of these patients over extended periods was intended.

More specifically, the NQAF for ERS (2001a) set guidelines for qualitative and quantitative evaluation within its documentation. Three of the nine guidelines are relevant to this study's evaluation protocol.

The NQAF for ERS (2001a), Guideline 3, advises that '*measures should consider the process and may consider physical factors, lifestyle, health professional directed behaviours and psychological and social outcomes'*. To encompass this guideline, physical activity levels and reason for referral were identified through quantitative methods. Social support was recognised through quantitative and qualitative methods and the importance of the referring health professional was questioned in the qualitative methodologies.

Guideline 6 proposes that evaluation should involve long-term (nine-months and beyond) assessment. Thus a 12-month tracking study, using quantitative methods, is the purpose of study 3.

Guideline 7 recommends that '*analysis should allow identification of specific determinants (physical, psychological, and socio-economic) of adherence to such schemes and long-term behaviour change'*. In accordance with this, variables have been correlated to determine factors that may influence attendance, completion and long term sustainability to physical activity following an ERS. These are reported in studies 1, 2 and 3.

Based on the evidence presented, the guidelines of the NQAF for ERS (2001a) and in line with Dugdill *et al*'s (2005) recommendations for evaluation of ERSs, the following methodology was utilised to optimise the evaluation.

2.3 Evaluation Methodology

The primary purpose of this evaluation methodology was to assess the effectiveness of an ERS for sedentary individuals in an area of the Northwest of

England, which can be considered by a health professional likely to benefit from increased levels of physical activity. The methodology was designed to ultimately improve the efficiency of the scheme by meeting the aims, as set out in section 2.1. In addition, it was important that the guidelines set out by the NSF for CHD (2000a) and NQAF for ERS (2001a) were met.

Dugdill *et al* (2005) identified 6 key stages in a high-quality evaluation process. These are shown in figure 1 and described, and achieved throughout the following section. Due to the nature of evaluation which should be iterative an additional arrow has been added from stage 6 to stage 2, whereby the process will recommence based on new findings.

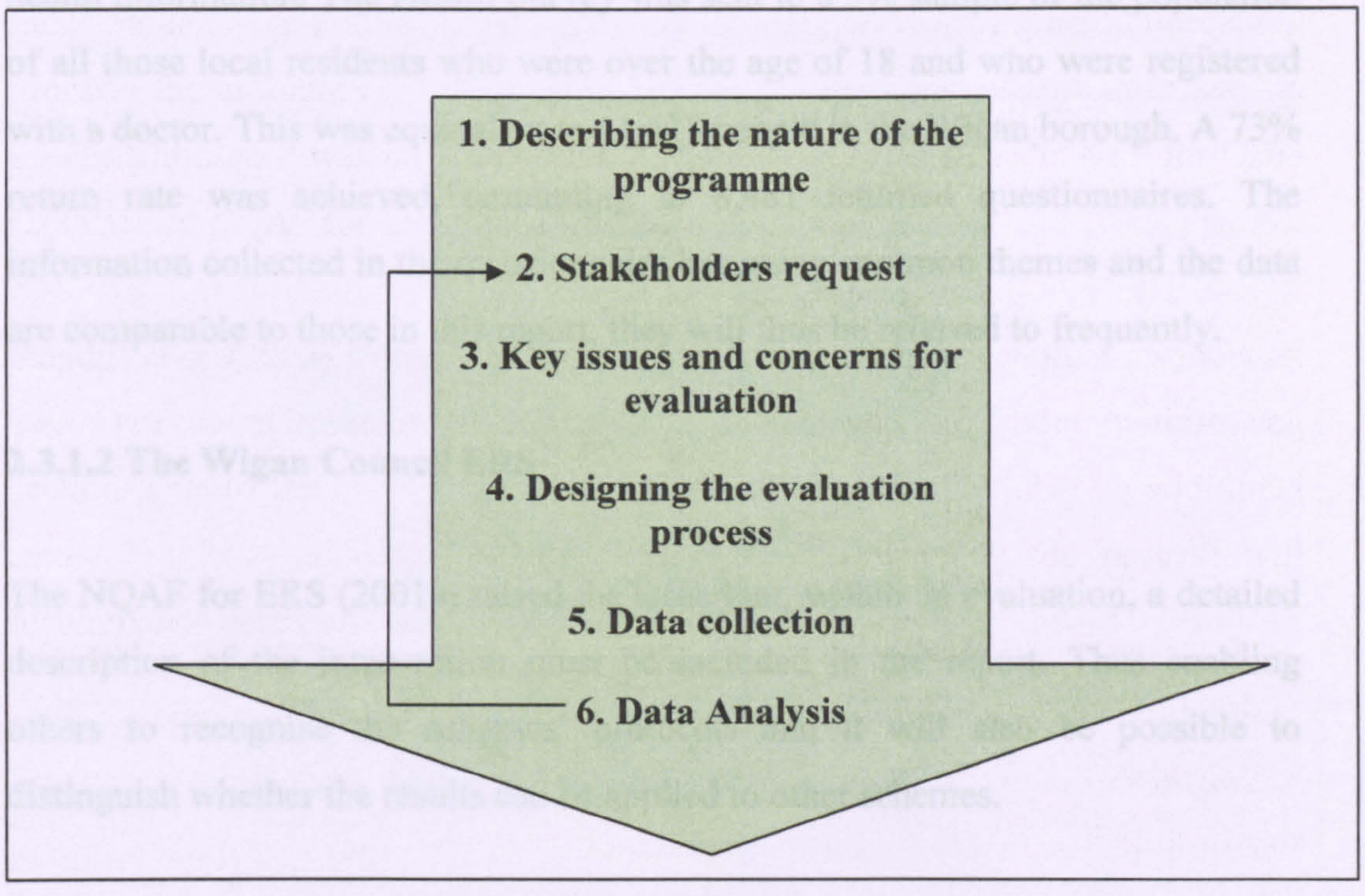

Figure 2. The diagrammatical process of evaluation within an ERS (adapted from Dugdill et al., 2005).

2.3.1 Describing the nature of the programme

In line with the NQAF for ERS (2001), and Dugdill *et al* (2005) recommendations for evaluation, the context of the study and the design of the intervention is discussed below. This will allow outcomes of the studies to be transferred to other settings.

2.3.1.1 Wigan Borough Health and Lifestyle Survey, (2001).

In 2001, a survey was commissioned by Wigan and Bolton Health Authority to assess the health of those living within the two neighbouring boroughs. It provides an insight into the health of those living under the health authorities' boundaries. The aim is to facilitate future improvements to the health of the local population through establishing those who are most at need. The survey aimed to obtain information relating to lifestyle, health status, perceived health status and socio-economic status.

It was timed specifically to link in with the 2001 Census to complete the gaps in health information. The Health Survey was sent to a 5% sample of the population of all those local residents who were over the age of 18 and who were registered with a doctor. This was equivalent to 11,618 people in the Wigan borough. A 73% return rate was achieved, amounting to 8,481 returned questionnaires. The information collected in the questionnaire has many common themes and the data are comparable to those in this report, they will thus be referred to frequently.

2.3.1.2 The Wigan Council ERS

The NQAF for ERS (2001a) raised the issue that, within an evaluation, a detailed description of the intervention must be included in the report. Thus enabling others to recognise the schemes' protocols and it will also be possible to distinguish whether the results can be applied to other schemes.

The ERS within this evaluation was based in a large industrial borough in the Northwest of England, which comprises some of the most deprived wards in the UK (Wigan Council, 2000). The ERS was set up as a pilot scheme in 1994, employing one full time exercise referral officer (ERO), working with eight GP practices. Following its success and subsequent funding, the scheme was launched throughout the whole borough in 1997. The scheme now employs four ERO's, who work across the entire borough (out of three centres), with an average participant intake of 1200 per annum, although this has varied dependent on

staffing levels. It aims to reach the national targets, as set out in the National Service Framework for CHD (2000) (milestones 2 and 3), as well as Older People (DOH, 2001c), through fall preventions (standard 6).

The ERS is part of the delivery mechanism for the borough's physical activity strategy (2000-2005), which aims to increase the physical activity levels of those within the borough, by making physical activity more accessible and enjoyable (Wigan Council, 2000). Referrals to the scheme are through health professionals in the borough and neighbouring areas. The scheme runs for 12-weeks, during which time the participant is introduced to, and participates in, exercise sessions which have been recommended by the ERO specifically for their needs. As can be seen in figure 2, during these 12 weeks, the participants receive a follow up phone call midway through the intervention and then a 12 week consultation with an ERO.

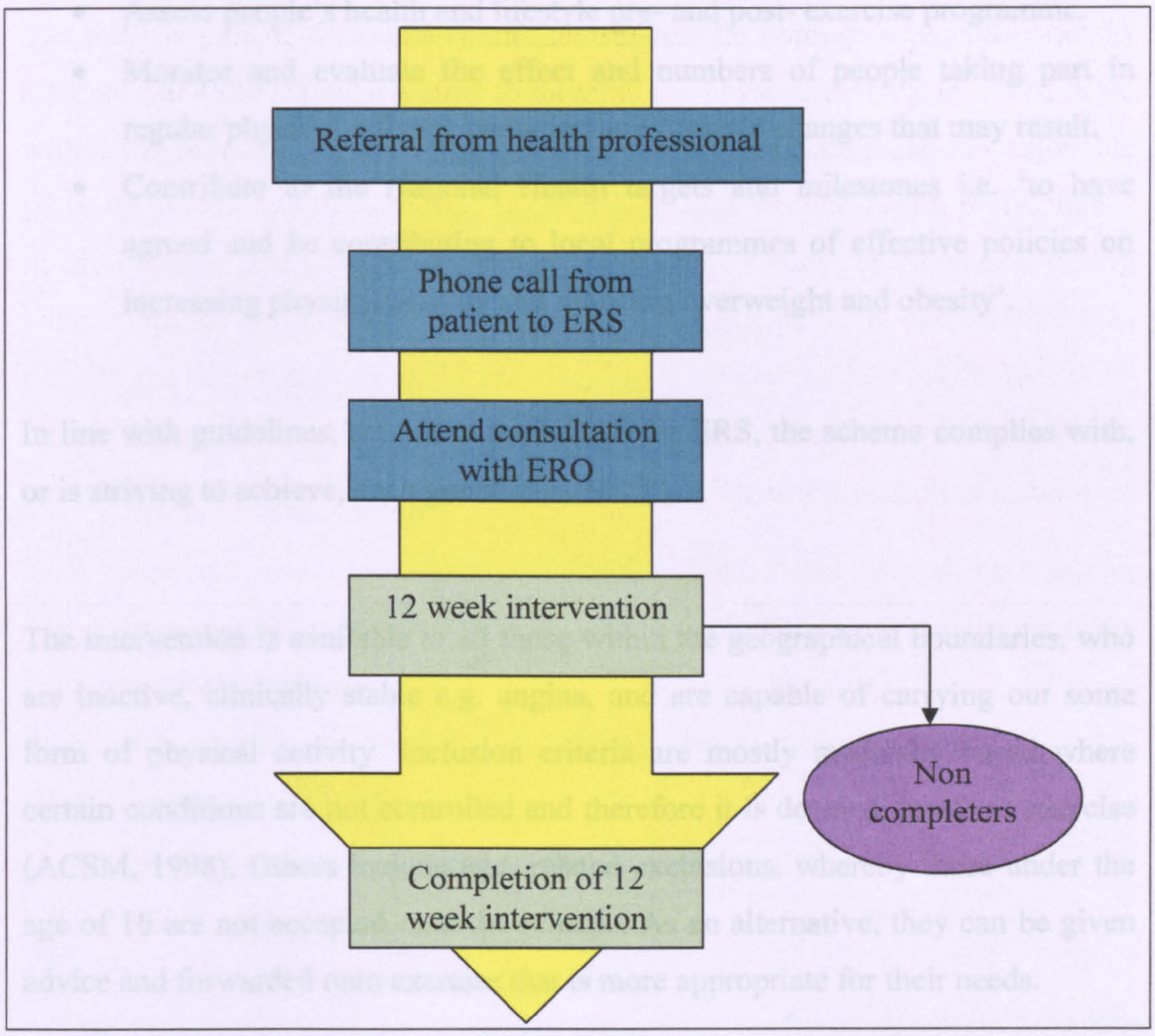

Figure 3- The ERS process

The key aim of the scheme is to

> *'increase the long-term participation in exercise by raising awareness of the benefits of exercise, improving the management of some diseases, e.g. CHD and Diabetes, whilst improving psychological and social well-being, and promoting healthier lifestyles'*
>
> Ashton, Wigan and Leigh PCT, 2002, p2.

They aim to do this through the following objectives.

- Reducing the health risks which are associated with sedentary lifestyle.
- Raise awareness of the benefits of a healthier lifestyle and the importance of physical activity.
- Assess people's health and lifestyle pre- and post- exercise programme.
- Monitor and evaluate the effect and numbers of people taking part in regular physical activity, including any lifestyle changes that may result.
- Contribute to the National Health targets and milestones i.e. 'to have agreed and be contributing to local programmes of effective policies on increasing physical activity and reducing overweight and obesity'.

In line with guidelines, set out in the NQAF for ERS, the scheme complies with, or is striving to achieve, such goals.

The intervention is available to all those within the geographical boundaries, who are inactive, clinically stable e.g. angina, and are capable of carrying out some form of physical activity. Inclusion criteria are mostly medically based where certain conditions are not controlled and therefore it is deemed unsafe to exercise (ACSM, 1998). Others include age- related exclusions, whereby those under the age of 16 are not accepted onto the scheme. As an alternative, they can be given advice and forwarded onto exercise that is more appropriate for their needs.

Appropriate referrals

The ERS, Steps to Health is available to all people who are either registered with a Wigan borough GP or live within the Wigan borough, and those who fit in the inclusion criteria. The referral must be clinically stable, aged over 16 years, CURRENTLY INACTIVE, and be able to take some form of activity. The conditions on the inclusion list all have evidence for the beneficial effects of exercise therapy.

Inclusion Criteria

People suitable for referral:

- Those who suffer one or more risk factors for CHD e.g.
  - Hyperlipidaemia
  - Controlled hypertension (<180mg Systolic and <100mg Diastolic)
  - Obesity/overweight
  - Smokers
  - CVA (Cerebral Vascular Accident)
  - Peripheral vascular disease
- Controlled metabolic disorders e.g. diabetes, thyroid disease
- Anxiety/Stress/Depression (mild to moderate)
- Stable psychiatric disorders
- Asthma, reversible/Obstructive Airway Disease
- Arthritis/Osteoporosis
- Post Childbirth
- Stable, treated Angina
- Post M.I patients who have completed Cardiac Rehabilitation, have had an exercise ECG Stress Test and who are clinically stable (not awaiting further investigation)
- Post Cardiac surgery (>3 months post surgery), clinically stable
- Stable controlled Heart Failure
- People with Physical Disabilities
- Post Surgery Rehabilitation
- Post Cancer Treatment Rehabilitation

Figure 4- Inclusion criteria for the ERS

2.3.2 Stakeholders

As part of the structure of the programme, a steering group was formed, following recommendations that all those who are affected by a problem should be encouraged to take part in the evaluation process (Stringer, 1999). This would ensure that the evaluation would take on issues of importance for those involved (Krueger & King, 1998). Dugdill *et al.*, (2005) reiterated this as a recommended component of the evaluation process.

Stakeholder and steering group meetings throughout 2001 and 2002, including public health, health promotion, exercise professionals, GP's and academic researchers, shaped the back bone of the evaluation. The group were multi-purposeful; expanding and contributing their knowledge of ERSs, whilst expressing perceptions on how the evaluation could influence and assist their profession. Furthermore, questionnaire planning was topical within the steering group meetings and staff within the ERS were heavily involved in its design.

2.3.3 Identifying the issues of concern for evaluation

Areas of concern for the evaluation of the ERS were determined as a result of the previously presented literature, along with the outcomes of the stakeholder meetings (in accordance with the guidelines of Dugdill *et al.*, (2005)) and the NSF for CHD (2000a) and NAQF for ERS (2001a). One of the outcomes of the stake holder meetings was for demographic data to be collected from the intervention to support future decisions about service development and funding. To complement these data, a local health survey had just been completed (Wigan and Bolton Health Authority, 2001). Thus information on the health of a sample from the total population could be considered in light of the ERS.

Furthermore, identifying those of this population who choose not to attend an ERS following referral, and recognising reasons for their non attendance is of up most importance to the interventions' future success. Previous research reported 40% of referrals not attending an initial appointment at an ERS (Lord & Green, 1995); this is a significant number of patients. This concept was to form study 1.

Although pre- and post- intervention analysis has been carried out previously within ERS (Lord & Green, 1995; Taylor *et al.*, 1998), unlike this study, the sample was sought from individuals displaying CHD risk factors only; completion for individuals with alternative referral reasons has not been investigated previously. In addition, social support has not been considered in relation to completion of ERSs. Recognition of patient characteristics in relation to completion is essential, since although ERS have grown considerably within the UK (Wright Foundation, 2003), little progress has been made with regards to improving completion to these schemes (Dugdill *et al.*, 2005; Gidlow *et al.*, 2005). Greater knowledge of reasons for non completion should enhance completion rates to an ERS. This was the aim of study 2.

In addition to longitudinal analysis of behaviour change as a result of ERS's being limited (Taylor *et al*, 1998; Harrison *et al.*, 2004), only one study had continued for 12 months, and that looked only at levels of physical activity. No known publications have identified individuals' characteristics which may have influenced long term adherence. Given the need for long term impact of ERSs due to the chronic conditions of those referred to them and the NQAF for ERS (2001) recommendations, a 12-month tracking study was designed to assess long term physical activity levels following completion of an ERS. This was essential to determine ultimate success of ERS's for physical activity promotion (Study 3).

Finally, excessive weight and obesity is a growing problem globally and has become a core issue for those attempting to improve health, particularly the DOH (1999, 2000a, 2001a, 2001b, 2002, 2004). Increasing physical activity in these populations provides the opportunity for reductions in body mass index and therefore improvements in health, but encouraging sustainable lifestyle intervention for this subgroup is challenging (Inelmen *et al*, 2004).

2.3.4 Ethics Approval

Ethics approval was sought and granted by Liverpool John Moores University and the Local Research Ethics Committee and Research Governance Committee. An application for Honorary Contract with the local PCT was approved and granted. Due to the nature of the participants on an ERS and therefore within this research, gaining Local Research Ethics Committee approval caused uncertainty. This was due to the patients being referred out of the NHS (by health professionals) to another intervention and therefore there was doubt as to whether approval was required by this committee (which was concerned with NHS patients only). It was ultimately decided that LREC approval was required to prevent any later questioning. This was later beneficial as it made the LREC aware of the research and encouraged promotion of the research. Therefore, it would be advised that future research within ERS should also get LREC approval.

2.3.5 Designing the evaluation process

The research was carried out in 4 stages (studies 1-4), in accordance with the overall aims set out above, and is classified as 4 separate studies, due to their differing concepts i.e. attendance, completion, long term sustainability and experiences during the intervention for overweight participants.

The quantitative component of evaluation was to form the rationale for the qualitative element. Unlike previous research methodologies that have used qualitative methods as a basis for the quantitative component, the quantitative factor was to form the basis of the qualitative element; because validated tools were making up the questionnaire, it was considered an excellent opportunity to further explore the factors experienced during an ERS based upon the outcomes of the quantitative component. The use of qualitative methodologies within exercise behaviour interventions gives an excellent opportunity to appreciate experiences, which this chronically diseased population encounter during attendance on an ERS.

Following on from the evaluation aims, the need to determine the most appropriate tools for carrying out the analysis was essential.

2.3.6 Time frames

For Study 1, data were collected over a period from December 1997 to December 2002, from data assembled for monitoring purposes within the scheme. Key demographic variables were obtained and included age, gender, reason for referral and referring health professional. These were utilised to describe the population characteristics of the ERS for the purpose of Study 1. The subsequent studies were carried out between March 2002 and April 2004. Although study 2 was based on participants who entered the ERS between March and May 2002, it was not completed until all those who commenced the course in May 2002 had completed in August 2003, due to the 12 week time frame of the intervention.

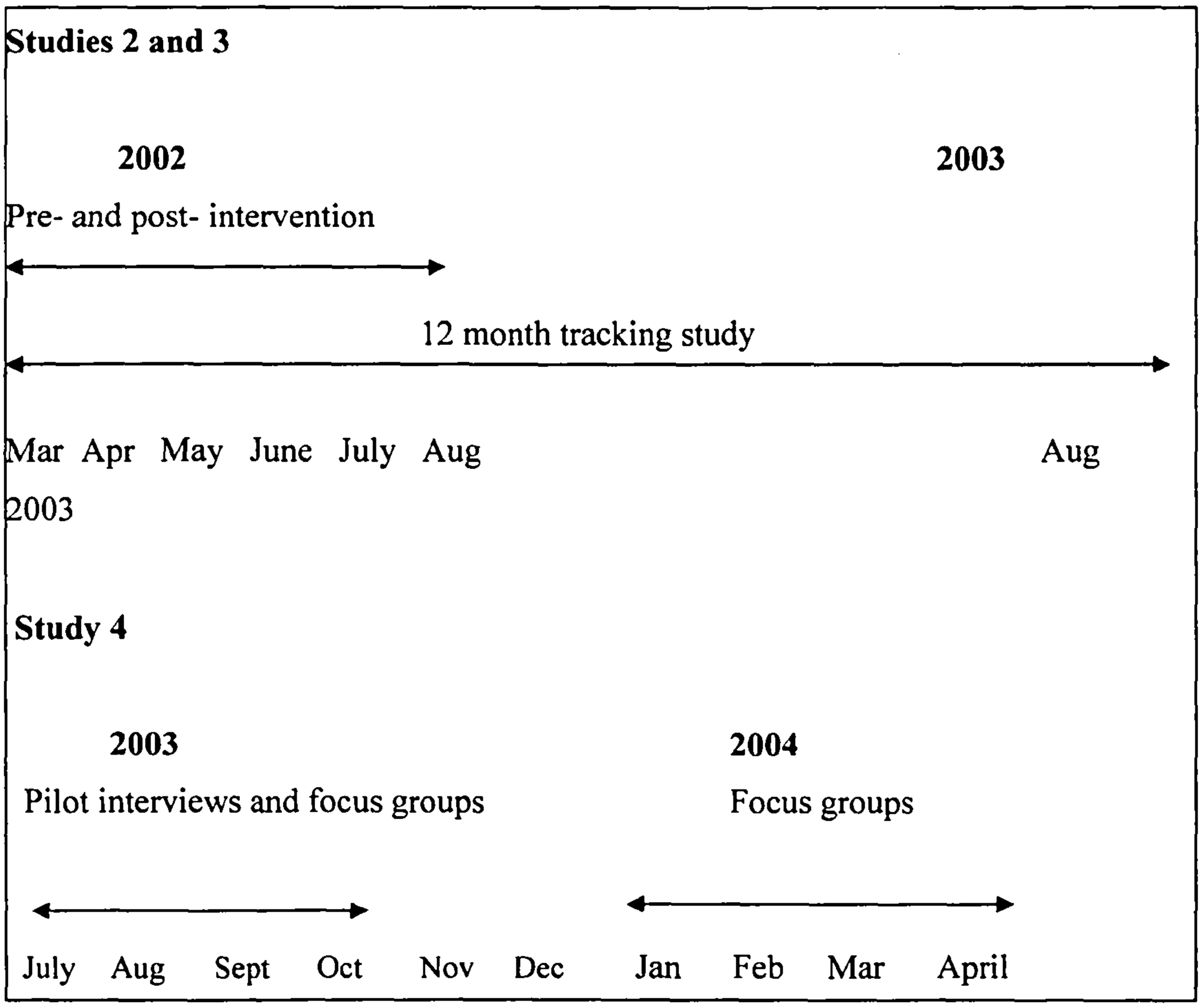

Figure 5 Evaluation Time Frames

Study 3 was piloted between July and October 2003 and then carried out with overweight participants between January and April 2004. The reason for a two month break was two fold; to allow reflection on pilot group data, and because a new course was commencing in January.

2.3.7 Collecting the data

The collection of a large data set over a 5-year time frame for study 1 provided a unique opportunity to identify a large sample, both in number and time.

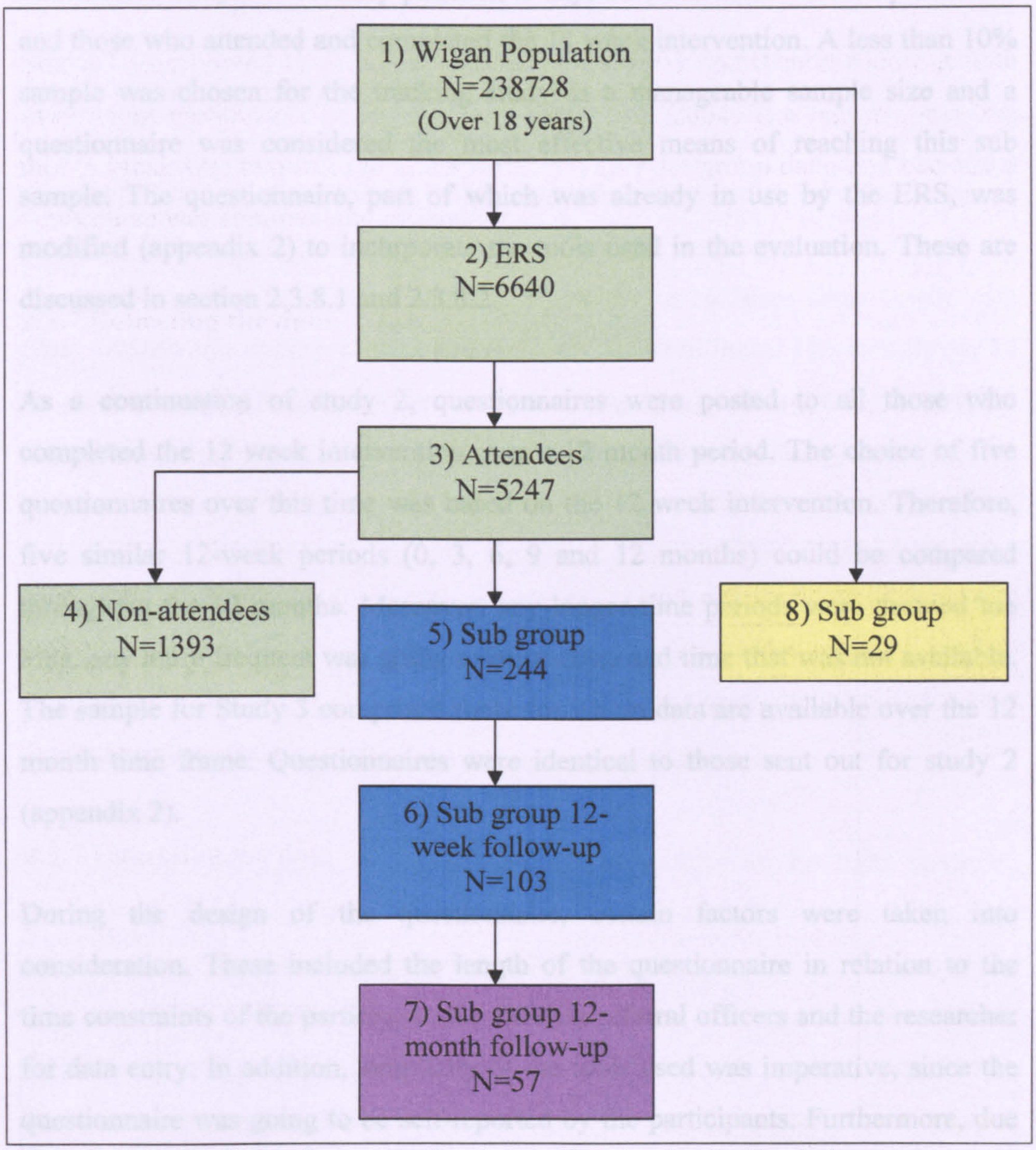

Figure 6- Sampling sub groups for data collection in studies 1-4.

Figure 6 displays the collection of data and samples for each study. The collection of large data sets over longitudinal periods was fundamental to achieve the first aim of exploring the profile of those referred to the scheme. The sample for study 1 was an inclusive data set of all those referred onto the scheme between 1997 and 2002. The recruitment of a large representative sample is one of the main strengths of the methodology; in fact, it is one of the largest known descriptive data sets within this field to date in the world.

For the second study, it was deemed necessary to access a more practical and informative sample to identify patterns, if any, between those who only attended and those who attended and completed the 12 week intervention. A less than 10% sample was chosen for the tracking study as a manageable sample size and a questionnaire was considered the most effective means of reaching this sub sample. The questionnaire, part of which was already in use by the ERS, was modified (appendix 2) to incorporate the tools used in the evaluation. These are discussed in section 2.3.8.1 and 2.3.8.2.

As a continuation of study 2, questionnaires were posted to all those who completed the 12 week intervention over a 12 month period. The choice of five questionnaires over this time was based on the 12 week intervention. Therefore, five similar 12-week periods (0, 3, 6, 9 and 12 months) could be compared throughout the 12 months. Moreover, any longer time periods were deemed too long, any more frequent was going to incur costs and time that was not available. The sample for Study 3 comprised those for whom data are available over the 12 month time frame. Questionnaires were identical to those sent out for study 2 (appendix 2).

During the design of the questionnaire, certain factors were taken into consideration. These included the length of the questionnaire in relation to the time constraints of the participant, the exercise referral officers and the researcher for data entry. In addition, simplicity of the tools used was imperative, since the questionnaire was going to be self-reported by the participants. Furthermore, due

to the average age of participants, the font was required to be larger than normal, for ease of reading.

It was decided for numerous reasons that the participant should complete the questionnaire when possible. Firstly, because the questionnaires at the later time points would have to be completed by the individual alone. Secondly, to reduce the likelihood of the person administering the questionnaire influencing the individual, and finally because there were to be up to three administers (the Exercise Referral Officers over the borough), who may all have a different method of administration. By allowing the participants to complete the questionnaire alone, these factors would be eliminated.

2.3.8.1 Physical Activity Measurement

Although not the main emphasis of the evaluation, the need to establish levels of physical activity pre- and post-intervention was paramount. Not simply to determine changes in physical activity levels, but to compare these levels with other variables to deduce a relationship, if any between them. The complexity of measuring physical activity in a free living population and the further complications of the clinical population that were to be completing the questionnaire, along with the time constraints of the exercise referral officers, led to the inclusion of the Godin and Shephard Leisure Time Physical Activity Questionnaire (Godin & Shephard, 1985) (LTPAQ) (Appendix 2). This questionnaire was also used in the Wigan and Bolton Health Survey (Holt & Elton, 2001), which adds to its attractiveness, because comparisons between the sub samples of referred persons and the general population can be made.

The questionnaire is scored as follows; each exercise intensity i.e. light, moderate and strenuous, has an equivalent Metabolic Equivalent (MET) score; Light = 3, Moderate = 5 and Strenuous = 9. One MET is defined as *'the resting metabolic rate, that is, the amount of oxygen consumed at rest, sitting quietly in a chair, approximately 3.5 mls O2 per kg of body weight x min'* (Jette *et al*, 1990). Therefore, the number of bouts of 15 minutes or more of physical activity of each exercise type will be multiplied by the relevant number (3, 5 or 9) to determine 3

different scores for each of the activity intensities. These MET scores are then calculated together and it is possible to convert the total MET score into a calorific score, to establish how many calories the individual will have expending during their 7-day period. The calculation is; bodyweight in Kg x MET value and duration = kcal energy expenditure

e.g. (80kg x 5 METS) x (30mins/60mins) = 200kcal.

(400) x (0.5) =200kcal

Paffenbarger and Olsen (1996) recommend that an exercise prescription for optimal health should expend 2000 kilocalories of energy per week. This energy expenditure should be comprised of light and moderate intensity exercises. Thus, taking this into account, a 80 kg person, working at 5 METS, would have to carry out ten 30minute periods of 5 MET work a week to achieve this goal. Therefore, the following calculations would be true for the Godin and Shephard Leisure Time Exercise Questionnaire (1985):

- (3 METS x 80kg) x (15mins /60mins) = 60 kcal

  (240) x (0.25) =60

  2000/60 = 33 times exercise per week

- (5 METS x 80kg) x (15mins/60mins) = 100 kcal

  (400) x (0.25) =100

  2000/100 = 20 times exercise per week

- (9 METS x 80kg) x (15mins/60mins) = 180 kcal

  (720) x (0.25) =180

  2000/180 =11 times exercise per week.

2.3.8.2 Social Support Measurement for Exercise Behaviours

The rationale for measuring perceived levels of social support stems from previous research, which identified its importance for health behaviours (Funch & Marshall, 1983; Cohen, *et al.*, 1997; Kaplan *et al.*, 1988; House *et al.*, 1998 and

Bloom *et al.*, 2001). Within this study, social support was measured via a quantitative tool, which was utilised to determine themes, if any, between social support and other measured variables. This tool was Sallis *et al*'s (1987) 'Social Support for Diet and Exercise Behaviour Questionnaire' (Appendix 2) and was the only questionnaire discovered that looked specifically at social support within diet and exercise behaviours.

The Social Support Questionnaire (Sallis *et al*, 1987) identifies the methods of social support that are given by family (members of the household) and friends (friends, acquaintances, or co-workers) to individuals who are trying to modify a diet or exercise behaviour.

There are 13 questions within the exercise sections of the questionnaire. Participants are required to answer questions on a 6 point likert scale, which runs from 1-6, 1 being 'none' and 6 being 'does not apply'. Questions A to F and J to M are related to family and friend participation. Questions G to I are related to family reward and punishment. Scoring of the questionnaire is done by totalling the scores from questions J to M, and A to F, and G to I, to gain three separate scores, indicating perceived family participation and friend participation and friend reward and punishment. Any scores of 6 ('does not apply') is recoded to '1'. Scores therefore can range from a value of 12 to 60, 12 being the minimum score and 60 the maximum.

2.3.8.3 Qualitative methods- focus groups

Qualitative methods were used to investigate the experiences of overweight participants on an ERS; a topic which has its basis in the quantitative outcomes of studies 2 and 3.

As with all research methodologies, the use of focus groups has its limitations. The negatives of focus groups lie with suggested lack of reliability due to uncontrollable nature of group interaction and the possible bias within the groups. In addition, they are said to lack generalisability, due to small numbers of participants and are therefore best used in combination with other research

methods. In their defence, they provide both individual and group responses (to questions) in addition to being a cost and time effective method of gaining in-depth information (Parker, 1999). Furthermore, they use group interaction to generate conversation, and due to the nature of this study (involving participants greatly under researched within ERS (therefore all topics can not be predicted)), this positive factor was indispensable. Previously, focus groups have been described as 'organised discussion' (Kitzinger, 1994), 'social events' (Goss and Leinback, 1996) and 'interaction' (Kitzinger, 1995), and therefore allow for less structured discussion, which can lead to a range of themes that may not have otherwise arisen. Within this study, the use of deductive and inductive questioning allowed the discussion to lead to unidentified topics.

It has been suggested that less structured discussions may lead to bias within the group, as a result of the beliefs of the researcher. This occurs simply as Selltiz *et al.*, 1962 stated *"interviewers are human begins and not machines"* (p.583). However, as there was only one interviewer within this research project, and therefore one set of views, the bias is deemed less, as it ought to be equal for each group (Bell, 1993). Borg (1981) drew attention to some of the many problems which are associated with focus groups. He suggested "*Eagerness of the respondent to please the interviewer, a vague antagonism that sometimes arises between interviewer and respondent, or the tendency of the interviewer to seek out the answers that support his preconceived notions are but few of the factors that may contribute to biasing of data obtained from the interview"* (p. 87). To contest this bias, participants were made aware at the start of each discussion group that there was no personal interest between the interviewer and the ERS. Questions were approached around the topic of physical activity participation and their needs as overweight individuals. However, there were no preconceived ideas, encouraging patients to answer openly and honestly.

2.4 Data analysis

Both qualitative and quantitative data collection was considered the most valid and reliable means of collecting data within the intervention. This allowed a greater understanding of the significance of variables for exercise behaviours.

2.4.1 Quantitative analysis

Data were analysed using Microsoft Excel 5.0 and SPSS for Windows version 12. Prior to analysis, all data were checked for consistency and error. Codes were assigned to each variable and referral categories were further grouped and re-coded into 4 clinical categories 1) CHD risk factor, 2) mental health, 3) musculo-skeletal and 4) other.

To determine the appropriate descriptive statistics interval ratio data that came from a normally distributed populations were described using the Mean and Standard Deviation. Interval ratio data from a non-normally distributed population was described using the median and inter-quartile range. Raw data is presented alongside percentages. Where the aim is to demonstrate comparisons between data sets that differ extensively in size, such as variations between the borough population and ERS population, or are diminutive in size, percentages only are reported.

In study 1, percentage difference ratio was applied between Borough population and referral scheme data to show the relative size of the percentage data as part of the total, due to the nature of the variables which were nominal. The Pearson Chi-Squared test of association was used to identify whether there were any significant associations between the variables of gender, age range, reason for referral, referral category and month of referral with attendance at the ERS.

In study 2, the Pearson chi-squared test was used to determine whether there were any significant associations between completion and non completion of the ERS and the following variables; age, gender, reason for referral, referral category and perceived physical activity levels. Pearson Chi-Squared was chosen due to the nature of the data, which was nominal. To determine whether there were any significant differences between perceived levels of social support and completion and attendance to the ERS, the Mann-Whitney U test was utilised due to the data being ormally distributed when tested using the Kolmogorov-Smirnov test for

normality. Each variable of social support (family participation, family reward and punishment and friend participation) was analysed separately.

In study 3, the Friedman test was used to determine whether there were any significant changes in the Metabolic Equivalent (MET), between the 4 time points across the 12 month period. To determine the location of any differences, Post-hoc analysis was carried out using Bonferonni corrected Wilcoxon tests. Levels of physical activity were descriptively compared against national recommendations for physical activity participation. Percentages differences were used to identify the changes in physical activity level over time by age range.

Statistical analysis of the data sets is further discussed in relevant chapters.

2.4.2 Qualitative analysis

Focus groups were transcribed and participants were coded by gender, participant number and age. Once all groups were transcribed, co-analysis by a fellow postgraduate research student was completed to identify themes in the content of the transcribed discussions. This method of analysis in qualitative studies allows enhanced validity through a similar notion to triangulation, whereby more than one source confirms the same outcomes (Trend, 1979 and Keen & Packwood, 1995). This also reduces the likelihood of researcher bias within focus groups. As Webb *et al* (1981) proclaimed *'once a proposition has been confirmed by two or more independent measurement processes, the uncertainty of its interpretation is greatly reduced. If a proposition can survive the onslaught of a series of imperfect measures, all with their irrelevant error, confidence should be placed in it'*. Thus, the utilisation of more than one researcher to confirm findings increases validity.

Discussion of interest was highlighted throughout the text and then matched with other similar discussion points to synchronise themes. These themes were later compared to themes in second and third session groups, the purpose of which was to identify change over time.

2.5 Summary

Methods and tools for evaluation have been discussed and Dugdill *et al* (2005) guidelines for evaluation of an ERS have formed the basis of the methodological framework. In addition, the NQAF for ERS (2001a) has influenced the choice of methodology. The use of both qualitative and quantitative methods is advantageous within an ERS, to provide a holistic evaluation within clinical populations.

A comparative analysis of 'Attenders' and 'Non-Attenders' on an ERS

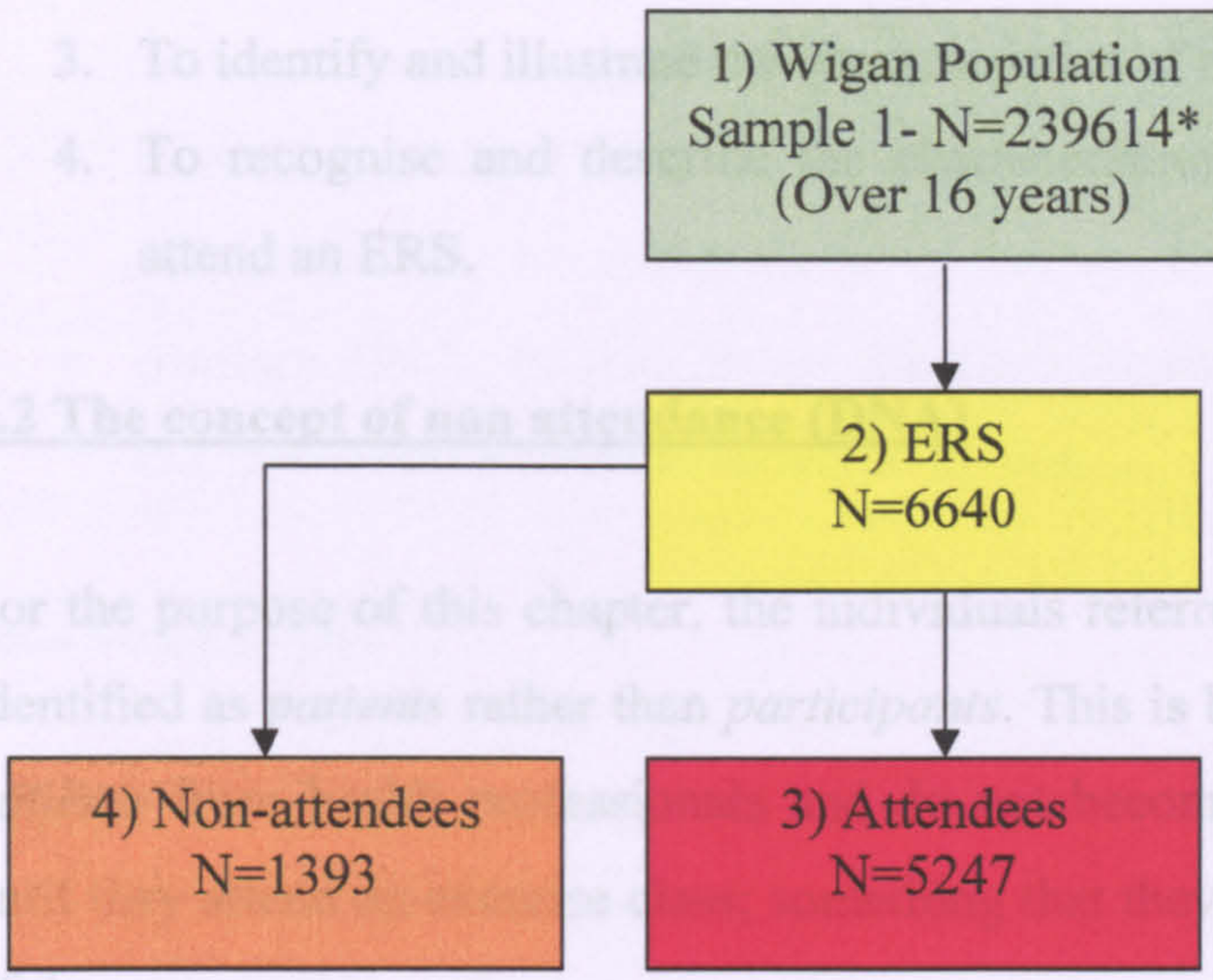

Figure 7-The Sample Population
* Data from the Office of National Statistics

3.1 Rationale for study

Increasing exercise in currently sedentary individuals is vital to improving the health of a population (DOH, 2004). Physical activity interventions within primary care are an opportune method of doing this. However, Lord and Green (1995) reported that 40% of those referred to an ERS did not attend the initial exercise session and Gidlow et al., (2005) reported figures between 35-60%. In addition, the NQAF for ERS (2001a) highlighted the requirement for analysis of suitability of patients for ERS. Furthermore, McKay *et al*., (2003) emphasised the need for studies to discover the barriers to becoming physically active for individuals who were currently inactive in various environments. To date, no studies have identified the significance of characteristics of non attenders to an ERS. Therefore, the focus of this chapter is on those who do not attend (DNA) an ERS and thus do not take the opportunity to increase their activity levels through an ERS.

3.1.1 Aims of study

1. To identify descriptive characteristics of the borough population.

2. To identify and describe the characteristics of those referred onto an ERS and compare these with the borough population
3. To identify and illustrate the characteristics of non attenders on an ERS.
4. To recognise and describe the characteristics of those individuals who attend an ERS.

3.2 The concept of non attendance (DNA)

For the purpose of this chapter, the individuals referred onto the scheme will be identified as *patients* rather than *participants*. This is because they are referred as *patients* from health professionals and do not become a *participant* in an ERS until they attend an exercise class; something that they have not done at this stage of the process.

Within this study, all DNA's are classified under one heading due to the separated data not being available. However, there are three DNA time points during the exercise referral process, when an individual may become a DNA (Figure 8).

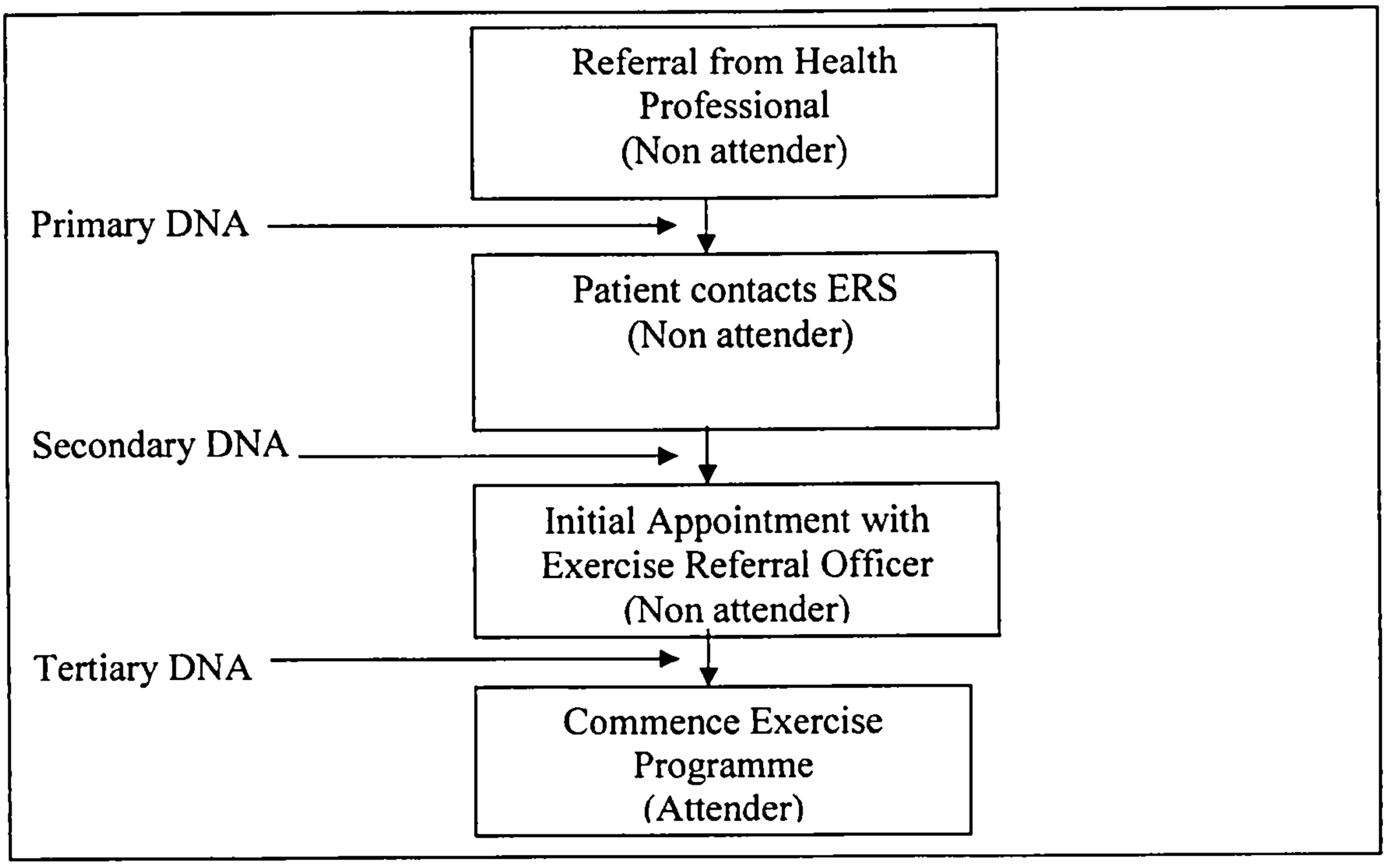

Figure 8. A model of Primary, Secondary and Tertiary DNA's

- Primary DNA- Patient received referral from a health professional e.g. GP, Physiotherapist and does not make contact with the exercise referral officer to make an appointment for an initial consultation.
- Secondary DNA- Patient makes an appointment to see the exercise referral officer and then never attends the appointment.
- Tertiary DNA- Patient makes the appointment, attends the appointment, but then never attends an exercise session.

3.3 Methodology

Referral sheets (appendix 3) that are given out to be completed by health professionals include information such as patient age, name, gender, patient's address, reason for referral, referring health professional and surgery address. This referral form is predominately used to assist the exercise professional in the patient's initial consultation, due to its personal and medical content. However, the information collected also supplies data for the ERS annual audit. Data entered on the referral forms represents the medical information of the patient and it is therefore essential that the information provided is accurate.

Data have been collected from these referral forms as part of the ERS scheme, since it began in 1997. For the purpose of this research, data have been collected from the referral forms from 30/12/1997 through to 13/12/2002. Of those referred, data have been used to compare those individuals who do not attend the scheme with those who did attend within the same time period, so as to see if attendance could be explained by any aspects of the information provided. For example, were non-attenders more likely to be from particular referral categories compared to those who attended?

3.3.1 Data Analysis

Raw data is presented alongside percentages. However, where the aim is to demonstrate comparisons between data sets that differ extensively in size, such as variations between the borough population and ERS population, percentages only are reported. Percentage difference ratio was applied between Borough population

and referral scheme data and to highlight the differences between the calendar months for DNA's and attenders.

The Pearson Chi-Squared test of association was used to identify whether there were any significant associations between the variables of gender, age range, reason for referral, referral category and month of referral with attendance at the ERS. Unless stated, data are from all those referred between 30/12/1997 and 13/12/2002 (N=6640). Where data is missing for variables, the individuals have been excluded from the analysis of that variable.

Almost 40% (N=2639) patients had been re referred (between 2-4 times) onto the scheme over the 5-year time period. The sample of 6640 is inclusive of all referrals.

3.4 Results

3.4.1 Comparisons of population characteristics for DNA and Attenders.

The population characteristics of the Borough were identified to compare with that of the exercise referral population.

3.4.1.1 The population of Wigan

Wigan is a large industrial borough in the Northwest of England, comprising some of the most deprived wards in the UK (Wigan Council, 2000). 301,415 people occupy the Wigan borough and 239,614 of these people are aged 16 years and above. Life expectancy in the borough is 76.63 years for males and 78.8 years for females and average age is 38.3 years. 11.9% consider their general health to be 'not good', and 98.7% of the population are 'White British' (Census, 2001, Office for National Statistics).

Of those within the borough who are over the age of 16 years (N=239,614) and estimated sedentary (N=71,140) (figure 9), 6640 (9.3%), were referred onto the scheme over the 5-year time period. Of this population, 1393 did not attend and 5247 attended the ERS (Figure 7).

When the information from Figure 7 is expressed in terms of impact of the ERS on the borough population, as in Figure 9, it can be seen that, of those eligible for referral (N=71,140), 9.3% are referred onto the ERS. This shows that the ERS is being greatly underused within the population.

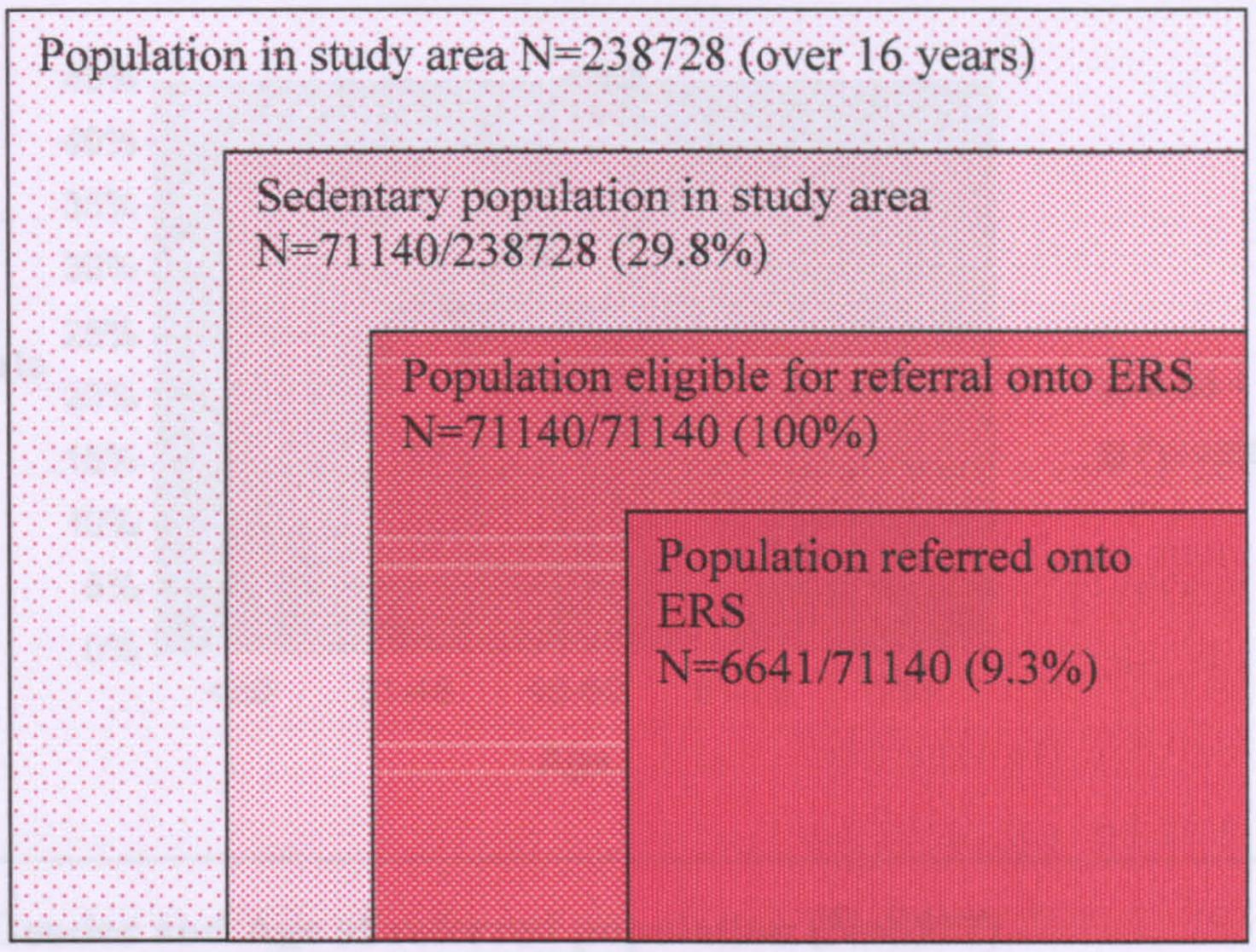

Figure 9. Population impact of the ERS on a Borough in the Northwest of England

Descriptive comparisons between the borough population and the exercise referral population were made to identify patterns, if any, in referrals.

Table 3.1 Age and gender comparisons between the Wigan population and the exercise referral population

	Population N=239,614*	**Intervention N=6640**
Mean age in years	38.3* ± 13 yrs	51 ±13 yrs
Gender- Female	51%*	61%
Male	49%*	39%

* Data from the Office of National Statistics

Mean age of those referred to the intervention is 51 years, and thus appears greater than that of the Wigan population (38.3 years). However, we have to consider that the ERS has a minimum age limit of 16 years. For those whose gender information was available (N=6628), 4029 females and 2599 males were referred onto the scheme, a ratio of 1.5 females to 1.0 male.

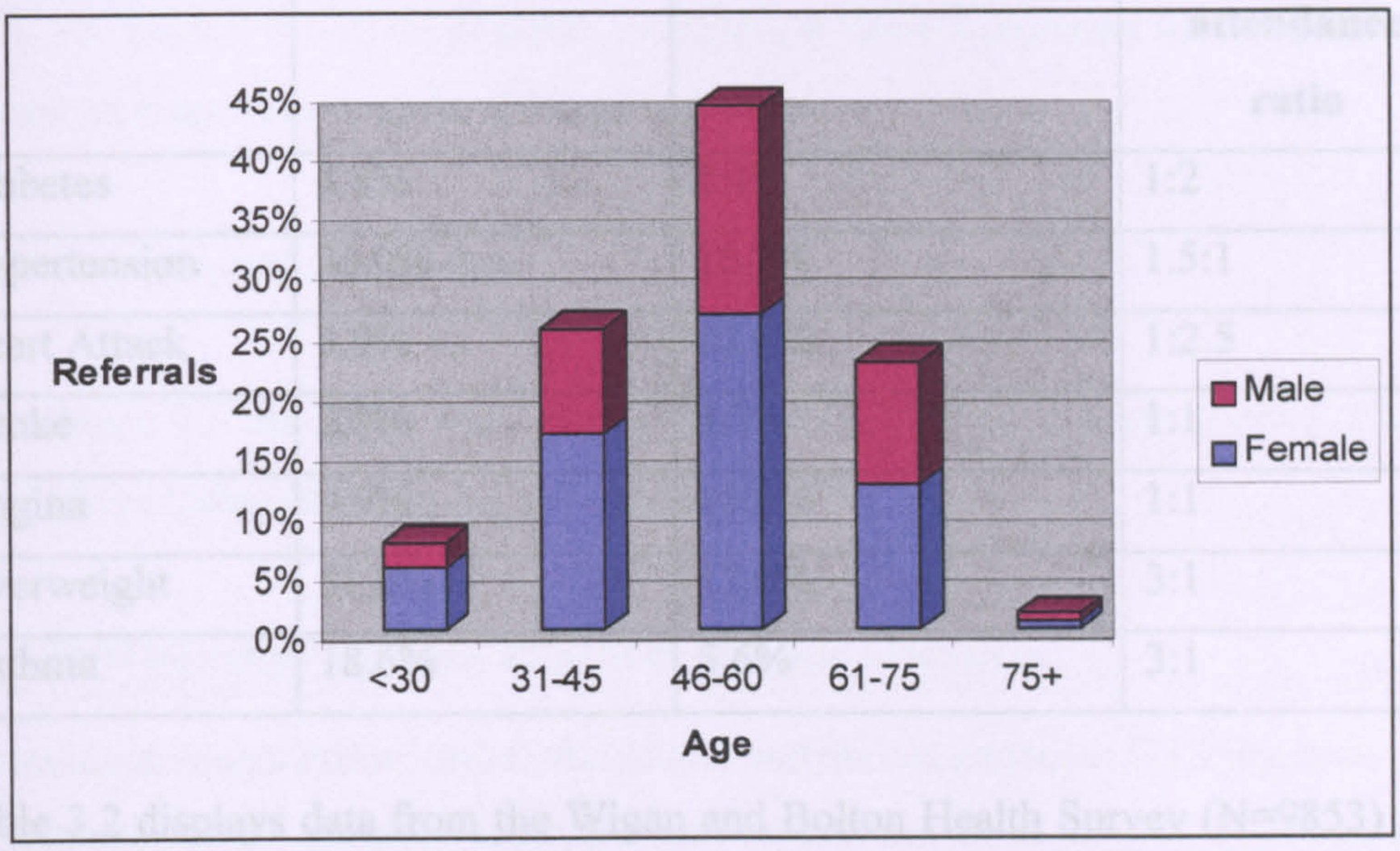

Figure 10 -Gender and Age of referred population (N=6527)

More females (60.8% of total referrals) than males (39.2% of total referrals) are referred onto the exercise scheme. In addition, more patients were referred within the 46-60 age range than any other.

Table 3.2 - Prevalence of disorders within the general population in comparison with the attending Exercise Referral population (2001)

Clinical disease	Health Survey data N=9853	Attendance to ERS N=468	Health survey to ERS attendance ratio
Diabetes	4.8%	8.4%	1:2
Hypertension	25.0%	16.7%	1.5:1
Heart Attack	3.9%	10.0%	1:2.5
Stroke	2.8%	3.3%	1:1
Angina	9.9%	10.0%	1:1
Overweight	51.2%	17.0%	3:1
Asthma	18.6%	5.6%	3:1

Table 3.2 displays data from the Wigan and Bolton Health Survey (N=9853) and those who attended the ERS in 2001 and for whom data were available (N=468). Figures are compared between those in the borough population and those referred and displayed as a percentage ratio.

The differences between the health survey population and the sample attending the ERS are shown in Table 3.2. It is not the intention to prove statistically that the information is significant; rather the emphasis is placed on certain disease statuses that appear to be to be grounds for referral. Data indicate that, at the time of publication of the Wigan health survey (2001), there were 4.8% who were diagnosed diabetics, 25.0% of participants with high blood pressure, 3.9% had been told by their doctor that they had suffered a heart attack and 2.8% had suffered a stroke. When these figures are compared to the rate of attendance to the ERS, it indicates that there are differences in the ratio of attendance to ERS and actual diagnosis of disease within the population. In some instances, this ratio is as great as 3:1 (only one in every three person who is overweight or obese in the population is attending an ERS). This indicates that 'overweightness' is very under represented within the exercise referral population. On the contrary,

diabetics and those referred following a heart attack are over represented within the ERS.

It is now the intention to statistically determine associations from the total number of referrals (N=6640), between key referral related variables and attendance to the ERS. As a result it will be possible to highlight those subgroups that may require greater strategic targeting for ERS participation.

3.4.2 The referred population

Attendance to the ERS was 79.2% (N=5247), and as a consequence 20.8% (N=1393) of total referrals did not attend the ERS.

3.4.3 Relationships between attendees and non attendees

Characteristic analysis of those who attend and do not attend an ERS has been carried out for age, gender, reason for referral and month of referral.

3.4.3.1-Age range and gender

Table 3.3 - The association between gender and attendance of participants (N=6628)

Gender	DNA (N=1381)	Attend (N=5247)
Male	581 (22.3%)	2018 (77.7%)
Female	800 (19.9%)	3229 (80.1%)
Total	1381 (20.8%)	5427 (79.2%)

Of total referrals, 20.8% did not attend. Female referrals equate to 60.8% of total referrals and 80% of these females attend the ERS. Only 39% of total referrals are males and over 22% of these males do not attend. Gender of patients referred onto the ERS is significantly associated to attendance $\chi^2(1, N = 6628) = 5.98$. From the pattern shown in the data, Females are more likely to attend an ERS than their male counterparts.

Table 3.4 - The association between age range and attendance of participants (N=6257)

Age Ranges	DNA (N=1311)	Attend (N=5216)
<30	163 (2.5%)	323 (4.9%)
31-45	398 (6.1%)	1243 (19.0%)
46-60	523 (8.0%)	2331 (35.7%)
61-75	199 (3.0%)	1258 (19.3%)
>75	28 (0.4%)	61 (0.9%)
Total	1311 (20.1%)	5216 (79.9%)

For ease of analysis, ages were grouped giving 5 sub categories. Age of patient was significantly associated to attendance onto the ERS $\chi^2(4, N = 6257) = 122.75$. Results indicate that those in younger (<30 and 31-45) and older (>75) age groups are less likely to attend. Those in middle age (46-60 and 61-75) are more likely to attend.

3.4.3.2 Reason for Referral

Reason for referral is deemed an important variable in the process of evaluation, due to the clinical population in which this evaluation is taking place. Furthermore, if it is identified that certain medical conditions are likely to impact attendance, then it will have implications for future patterns of referral from health professionals, including referring more successfully to include under represented categories and those who are more likely to attend and complete an ERS.

On the health professionals referral form, there are up to 4 reasons for referral, and although 52% (N=3440) were referred for a single reason, 39% of total referrals were referred for more than one reason (N=2639). For simplicity, analysis has been limited to one principal referral reason.

Reasons for referral have been categorised into generic groups in Table 4.7. Reasons for referral included in **'CHD risk factor'** include Angina, Blood

Pressure, CHD, Cholesterol, Diabetes, Fitness, Heart Attack, Heart Surgery, Overweight, PVD and Smoking. Referral reasons under '**Mental Health'** included Depression/Stress and Mental Health. Referral reasons under '**Musculoskeletal'** include Osteoarthritis, Arthritis, Back Pain and Injury. Finally, those referral reasons that fell under '**Other**' included Post-Cancer treatment.

Table 3.5- The association between Referral Category and attendance of participants (N=6079)

Referral Category	DNA	Attend
CHD Risk Factor	575 (19%)	2417 (81%)
Musculoskeletal	291 (14%)	1816 (86%)
Mental Health	45 (14%)	281 (86%)
Other	26 (4%)	628 (96%)
Total	937 (15%)	5142 (85%)

Referral category is significantly associated with attendance to an ERS χ^2 (3, N = 6079) = 103.64. It is apparent that patients referred with a CHD risk factor or musculoskeletal conditions were more likely to not attend than expected. Furthermore, those referred with for 'mental health' were more likely to attend than not. To further analyse these findings, the 4 referral groups were broken down to actual referral conditions so as to identify more specific correlations between the referral condition and attendance.

It is important to note that, within both the DNA and attend datasets, primary reason for referral is somewhat subjective. Due to many of the disease status being interlinked e.g. overweight and CHD, it is the decision of the referring health professional to determine the primary referral reason that is given on the referral form.

Table 3.6-An association of the principal reason for referral and attendance at the ERS (N=5410)

Reason for Referral	DNA	Attend
Angina	11 (1.3%)	463 (10.1%)1
Arthritis	76 (8.9%)	955 (20.9%)
Asthma/COAD	19 (2.2%)	243 (5.3%)
Back Pain	189 (22.3%)	810 (17.7%)
Blood Pressure	54 (6.4%)	641 (14.0%)
Depression/stress	43 (5.0%)	279 (6.1%)
Diabetes	17 (2.0%)	165 (3.6%)
Heart Attack	32 (3.8%)	213 (4.6%)
Heart Surgery	21 (2.5%)	152 (3.3%)
Osteoarthritis	16 (1.9%)	6 (0.1%)
Overweight	329 (38.8%)	314 (6.9%)
Total	846 (16%)	4564 (84%)

Eleven out of twenty nine reasons for referral have been analysed. This is due to small numbers of referrals in other categories, which made them inappropriate for statistical analysis. Primary referral condition was found to be significantly associated with attendance $\chi^2(11, N = 5410) = 857.52$. Interestingly, overweight people were more likely to not attend than expected; back pain and osteoarthritis are also referral reasons where patients are less likely to attend than expected. In contrast, those who were arthritic or asthmatic, had suffered a heart attack, heart surgery or associated diseases such as high blood pressure, diabetes and angina were positively associated with ERS attendance.

3.4.4.3 Monthly referrals onto the ERS and likelihood of attendance

It is possible that attendance to ERS is influenced by seasonal variations and by the time of year that patients entered into the programme (Lord & Green, 1995). Therefore, these data was analysed to examine associations between month of referral from health professional and attendance rates. Percentage of non attenders

was shown to highlight the differences between the calendar months for DNA's and attenders.

Table 3.7- Association between month of referral and attendance (N=6640).

Reason for Referral	DNA	Attend	Total	% of non attenders
June	581	358	939	62
March	90	459	549	16
April	87	450	537	16
August	88	458	458	16
February	83	482	565	15
September	75	459	534	14
May	69	415	484	14
October	78	494	572	14
November	77	490	567	14
January	67	456	523	13
July	67	479	546	12
December	31	247	278	11
Total	1393	5247	6640	21

Table 3.8 indicates that the calendar month is significantly associated with attendance and non attendance to the ERS χ^2 (11, N =6640) = 1111.15 (p=<0.05). The greatest number of referrals are in June (N=939). However, this is also the month in which patients are least likely to attend. Furthermore, it is clear to see that lowest non attendance rates come when referrals are lowest (N=278).

3.4 Summary of Findings

- An average of 1328 patients are referred to the scheme each year.
- The mean age of the exercise referral population (51 years) is greater than that within the general borough population (38.3 years).
- More females than males are referred to the ERS.
- When compared to the borough, diabetics (1:2) and heart attack (1:2.5) patients are over represented within the ERS.

- Asthmatics (3:1) and overweight and obese (3:1) patients are under represented within the referral population.
- 21% of all referred patients do not attend an exercise referral intervention.
- Females are significantly more likely to attend than their male counterparts.
- Attendance is significant to age; more individuals in the 46-60 age group attending.
- Reason for referral is significantly associated with attendance to an ERS; those referred with a CHD risk factor or musculoskeletal diseases are more likely to not attend. On the strength of this, attendance is significantly associated with certain disease conditions.
- Month of referral onto an ERS is significantly associated to attendance or non attendance with June seeing higher than expected non attendance.
- Month in which referrals are greatest is month in which non attendance rates are greatest. Lowest referral rates per month are identified with lower non attendance rates.

3.5 Discussion

The preliminary aims of this study were to identify descriptive characteristics of the borough population and variance between this population and those who are referred to an ERS. The purpose of this was to add to previous research that highlighted both the impact of an ERS within a community (Harrison *et al.*, 2005) and unsuitable referrals made to an ERS from health professionals (Johnston *et al.*, 2005). Results show that of those eligible for referral, 9.3% are being referred by health professionals with the borough. However, the ERS has the potential to increase the third of the Wigan borough population who are physically inactive (Wigan and Bolton Health Authority Survey (2001). The less than 10% who are being referred is a diminutive number and the purpose of Table 3.1 was to highlight certain subgroups of people who are not being represented within the ERS. There are expected discrepancies between the general population and the exercise referral population, because age (mean age 38.3 and 51 years respectively) and probably therefore poor health status of those referred to a scheme, will be greater. However, the data suggest that there are certain

population subgroups who could benefit from increases in physical activity, yet are not being referred by health professionals within the borough. In particular, overweight and obesity has a very high prevalence within the Wigan population (51.2%), but referrals for the condition to the ERS are low in comparison (table 3.2). In line with the House of Commons Report (2003-04), this is of particular importance to the borough in meeting national targets to reduce the rates of obesity and overweight. In contrast, heart attacks and diabetic patients are over represented in the ERS. These disease classifications have had much attention in recent years, in particular the specific National Service Frameworks published in 2000 and 2001 respectively (DoH, 2001a and 2001b). It is possible that these documents have influenced referrals from primary care in an attempt to meet national guidelines. Thus it may herald that obesity and overweight referrals will increase in future years, following more recent policy documents (NAO, 2001; HDA, 2003; Royal College of Physicians (2004); House of Commons, 2004). Future research following up this predicament would allow understanding on the influence of national policy documents on the exercise referral process. However, this information alone adds to previous research on the process of referral to an ERS by highlighting those within a population who are not being targeted for ERS.

Identification of the characteristics of non attenders and attenders on an ERS was an important component of the study. Of 6640 patients referred to the scheme, 21% did not attend the ERS and this is greater than other lifestyle interventions, such as physician-based smoking cessation interventions (Franke *et al*, 1995). Since 'non attenders' have not been identified in detail previously, it is not possible to compare this figure to other ERS. However, the recognition of why this subgroup is not attending is fundamental to ERS's. To further identify these individuals, their characteristics were broken down and analysed to recognise associations, if any, between these participants and those who attend the ERS. These included gender, age, referral reason, referring health professional and month of referral.

It is apparent that more females than males are referred to the ERS. They are also more likely to attend than males. The motive for greater attendance levels of

females may be multifaceted and requires further investigation. However, as suggested by Biddle *et al.*, (1994), it is possible that the more dominant female age group (46-60 years) are not working full time, due to their traditional roles and are thus able to attend the classes; the majority of classes within this ERS being held in the day. However, Johnston *et al.*, (2005) reported that significantly greater numbers of women were not attending due to psychosocial reasons e.g. family ties, age, not interested in ERS, than men. Moreover, reasoning for males being less evident in ERS may be two-fold; it is possible that males are less likely to visit their GP's. Hence, they are not presenting themselves for referral. Furthermore, if females are presenting themselves more frequently at health professionals, then they are more accessible for referral. However, Johnston *et al.*, (2005) reported that males were more likely to not attend due to medical contraindications thus had presented themselves at the health professionals, but were not able to attend the ERS. It is also possible that the ERS is suggested to an equal number of males and females, yet males are less interested in attending due to the options available within the intervention and are therefore not referred. Alterations in this pattern of attendance may require increases in male instructors and exercise referral officers to encourage this, along with suitable and appealing classes for the male population. Further investigations may clarify this matter. Finally, it may be appropriate that females are referred more frequently and are more likely to attend because of their generally lower levels of physical activity (DOH, 2004). However, the reduced numbers of males who are referred and who attend is problematic in the prevention of CHD and overweight and obesity, where males are at higher risk (Joint Health Surveys, 2002; BHF, 2004), but are less likely to participate in an ERS. Alternatively, males are generally more active in the UK (Department of Health, 2004) and are therefore not as eligible for referral. However, since incidence of CHD is greater in males than females (BHF, 2004) and because physical activity is a strong preventative measure for CHD, any increases in activity should be encouraged.

Attendance was also significantly associated with age ($p<0.05$); individuals aged 46-60 years were more likely to attend and those below the age of 45 and above 75 are less likely to attend an ERS. Johnston *et al.*, (2005) reported that older adults (57 ± 12 years) were significantly more likely to not attend due to medical

reasons, thus explaining the lack of attendance of older adults in poorer health? Justification for this may be similar to that for gender, whereby certain individuals may not present themselves to health professionals, due to better health. Promotion from alternatives to health professionals, such as local press may encourage younger age groups to self-refer to ERS. Furthermore, the way an ERS is promoted to these age groups by referring health professionals may not appeal. This will revert back to training for referring health professionals in promoting the ERS as an appealing concept to differing age groups. However, this promotion must match the intervention provided by the ERS; therefore it will also require age related adaptations to ERS. This could involve new promotional tools and exercise classes specific to younger and older age groups.

Although those within the 46-60 year age range were more likely to attend in this study, previous research has indicated that many people over 50 years of age considered themselves too old to start exercising, if they were not already doing so. In addition, for those who were physically active, there was a concern about over exerting themselves and the dangers associated with this (Finch, 1997). Therefore, emphasis on ability to exercise and the advantages of being physically active should be highlighted to those who attend referring professionals and are currently sedentary. This will be discussed further in chapter 7.

Data analysis indicated that there were significant patterns between reason for referral and attendance to an ERS. In particular, individuals with a 'CHD risk factor' are less likely to attend and this may be due to contraindications for exercise as reported by Johnston *et al.* (2005). Interestingly, within this category, all disease statuses are more likely to attend than not, with the exception of 'overweight' patients, who are more likely to not attend. The reasoning behind this is not clear and it is possible that those who are referred for 'overweight' find the bodily movement required for physical activity difficult. However, if that was the reason for non attendance, then it is possible that arthritics would not attend either. It is also possible that non attendance is linked to psychosocial conditions as suggested by Johnston *et al.* (2005). Alternatively, it may be due to the longevity of the disease; for individuals with chronic lifestyle diseases such as

overweight and obesity, behaviour modification is going to be more challenging, due to the fact that their disease has been brought about by longitudinal poor health behaviours.

In contrast, individuals who have had a medical episode e.g. heart attack, may be more likely to attend an ERS, due to the fact they have experienced a health scare and are thus frightened into changing their behaviours. These differing patterns in attendance between referral reasons may necessitate individualised exercise referral programmes, including different, more intense methods of encouragement to change long term behaviours and recognition of the psychosocial barriers to physical activity participation. However, this needs to be examined in greater detail to discover reasons for non referral and non attendance.

Ultimately, attendance is related to the referral process, which is inclusive of the preliminary contact with the referring health professional, leisure centre staff where the initial consultation is likely to take place and exercise referral staff who conduct the initial consultation. The fact that 21% of all referred patients decided not to attend the ERS, before they have partaken in it, suggests that their decision stems from their experience of this referral process. Moreover, it is proposed that the referring health professional has a large impact on this process; Jackson *et al*, (2005) reported that the greatest predictor of attendance at cardiac rehabilitation services is endorsement from a physician. Furthermore, the strongest significant predictor of physical activity promotion is the personal physical activity level of the health professional (McKenna *et al*., 1998). However, recent research has proposed that the referring professionals' enthusiasm (measured by numbers of referrals made over a 5-year period) for physical activity promotion is not significantly related at attendance to an ERS (Harrison *et al*, 2005). However, since enthusiasm was defined by number of referrals over a 5-year period, we cannot presume that referral was endorsed; minimal information may still be given by health professionals at consultation and motivation may still be lacking. David *et al*, (1980) reported that patients actually expect their GP's to encourage lifestyle change. Thus it is hypothesised that promotion of physical activity for health professionals would increase the likelihood of endorsement of ERS's and therefore attendance on an ERS. This promotion to health professionals may

further be enhanced through the publication of related articles in journals such as Family Practice (Calnan & Williams, 1993) and BMJ (Harland *et al*, 1999; Elley *et al*, 2003) encouraging greater acknowledgement of the health benefits of physical activity from health professionals to patients.

Stevens *et al* (1998) suggested that higher attendance rates might be achieved if patients were given a consultation time on their referral note, which they had to cancel or change if not convenient. Within the scheme investigated here, the patient is currently responsible for contacting the ERS to arrange this initial appointment. It is proposed that this is a barrier to attending, as unmotivated individuals will be less likely to call. In addition, it is possible that some patients feel anxious about making a call to an environment in which they are unacquainted; a factor which links with an individual having a lack of 'exercise identity' as investigated by Hardcastle & Taylor (2005). Modifications to put this into place would require a high level of collaboration between health professionals and the ERS, so that appointments could be made in advance, or initiated by the exercise referral officer. This collaboration between health professionals and the ERS, although challenging initially, may provide a strengthened relationship between the two parties, encouraging an enhanced service; after all, lack of feedback has previously been highlighted as problematic to referring health professionals (Graham *et al*., 2005).

It has previously been suggested that seasonal variations may affect adherence to a primary care physical activity programme, particularly during typical holiday periods e.g. Christmas and summer months (Taylor *et al*, 1998). It is apparent from the data in table 3.8, that month of referral is significantly associated with attendance onto an ERS. Furthermore, highest non attendance rates in June are in line with highest referral rates and lowest non attendance rates in December are in line with lowest referral rates. This is of interest due to both being typical holiday periods within the UK; thus variations are not likely to be answerable to participants' and staff absence. We would not suggest an alteration of referral rates, so that referrals can be made in months when patients are more likely to attend e.g. December. On the contrary, we should seek to define the reasoning behind heightened non attendance rates in June. One possible reason for this

greater numbers of DNA's is greater rates of referrals, meaning longer waiting times, something which Taylor *et al.,* (1998) found that low adherers criticised. It is proposed that referrals are kept within manageable numbers, to avoid long waiting times and ensure the efficient transfer of patients onto an ERS. However, this would also dispute Harrison *et al's.*, (2005) criticism that ERS are not effective for Public Health due to the diminutive proportion of the population they affect. Whereas present recommendations would require fewer referrals to ensure a more effective referral process, Harrison et al., 2005, necessitated greater referral rates to have a larger impact on the population. To comply with both recommendations, the growth of ERS interventions through staffing and funding would allow larger referral numbers, yet shorter waiting times.

3.6 Summary

Of all those referred, 21% did not attend the ERS. Female referrals are greater in number and females are more likely to attend the ERS than males. In addition, those in the middle age groups (46-60 years) are more likely to attend. Different referral reasons show differing patterns of attendance, which is possibly linked to disease type and status. In particular, overweight and obesity are of significance, due to their lesser probability of attending an ERS.

Ultimately, this study adds a novel understanding of, not only the people who are referred to an ERS and do not attend, but also who these individuals are and possible reasoning for their non attendance. Furthermore, it is has highlighted the under use of the ERS within a population and the disease statuses and genders that are under referred from health professionals.

Following those who are referred and attend an ERS, progression to identify those who attend and complete an ERS is necessary in the evaluation of an ERS, due to this currently being the marker of success of these schemes.

Study 1

- Referrals are more likely to be female and referred for diabetes or a heart attack. Overweight, obese and asthmatics are underrepresented in ERS compared to the borough population.
- Gender, age, reason for referral and month of referral are significant to attendance to an ERS. Females and those between 46-60 years referred for CHD or a musculoskeletal condition are more likely to attend.
- Referral rates in June were negatively associated with attendance and were greater than for any other month.

Study 2

Study 3

Study 4

Population characteristics of completers and non completers of an ERS.

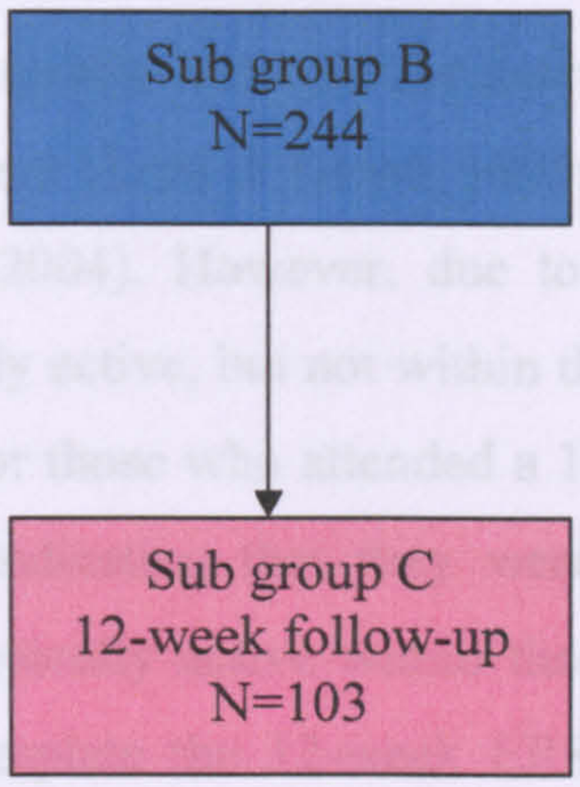

Figure 11- The sample population for study 2

4.1 Rationale for study

The previous chapter identified patients who were referred to an ERS in the borough. Furthermore, it recognised and differentiated between those who attended and those who failed to attend the initial consultation with an exercise referral officer. It is the aim of this chapter to compare those of the initial attending sample who completed (N=103) and failed to complete (N=141) the 12 week exercise intervention.

Previous studies have identified physical activity levels pre- and post-intervention. Taylor *et al* (1998) found that age, gender, employment status and occupational type, marital status, attained educational level and housing type were not related to adherence to an ERS. The main indicator of exercise adherence was exercise level at the start of the scheme and further analysis showed significant relationships between adherence and body weight, sum of skin folds and hip circumference.

Levels of social support within an ERS have never been quantitatively examined pre- and post- intervention. This seems appropriate, considering the previous qualitative research indicating its importance (Hardcastle & Taylor, 2001; Stathi *et al*., 2004; Crone-Grant, 2005). Therefore, acknowledging the characteristics of

those who attend and/or complete an ERS will enable a greater understanding of the needs of those who are referred to an ERS.

The use of adherence as a measurable outcome for exercise referral interventions has been evident in previous work (Lord & Green, 1995; Taylor, 1998; Dugdill *et al*, 2004 and Harrison *et al*, 2004). However, due to the possibility of some participants becoming physically active, but not within the scheme's structure, the term *completion* is used here for those who attended a 12-week consultation with the exercise referral officer, indicating that they were still attending exercise classes and were therefore physically active within the scheme's boundaries. In contrast, those who fail to complete the 12-week ERS are referred to as '*non completers'*. Thus it is the notion of *'non completers'* and '*completers'* that are to be investigated within this chapter.

4.1.1 Aims of study

1. To identify associations of variables (age, gender, reason for referral and physical activity participation) pre-intervention between those who do complete an ERS and those who do not complete an ERS.
2. To determine pre- and post- intervention social support to identify an association between social support and likelihood of completing an ERS.

4.2 Methodology

From this point, the sample is referred to as participants rather than patients due to their being referred as a patient to participate in a scheme outside the National Health Service boundaries.

The data within this study were collected by the exercise referral officers through their consultations with the participants. The questionnaire used to collect the data is discussed in detail in section 3.5.8.

The data source is inclusive of all those who attended over a 3 month period, from March 2002 to May 2002. This includes 244 referrals, which is 81% of average

monthly referrals (N=1200 per annum/N=100 referrals per month). The three month time frame was decided due to it providing a manageable data set for the researcher whilst being large enough to give representative data (of the ERS). Data are not complete for all variables due to non completion by participants. This is reflected throughout the results by differing sample sizes.

4.2.1. Data Analysis

Raw data is presented alongside percentages. Pearson chi-squared test was used to determine whether there were any significant associations between completion and non completion of the ERS and the following variables; age, gender, reason for referral, referral category and perceived physical activity levels. Pearson Chi-Squared was chosen due to the nature of the data, which was nominal. To determine whether there were any significant differences between perceived levels of social support, completion and attendance to the ERS, the Mann-Whitney U test was utilised due to the ordinal data that was not normally distributed when tested with the Kolmogorov-Smirnov test for normality. Each variable of social support (family participation, family reward and punishment and friend participation) was analysed separately.

4.3 Results

Of the 244 patients who attended over the 3 month period, fewer than half of those who initially attended, 58% (103/244), did not complete the 12-week intervention.

4.3.1 Age and gender analysis of completers and non completers

Within this data set, and for whom data were available, (N=244) 55% (134/244) were female and 45% (110/244) male. Of those who attended the ERS, 61% (76/125) were within the 46-60 age range.

Table 4.1- The association between gender and completion and non completion of participants (N=244)

Gender	Complete (N=103)	Non completion (N=141)
Female	53 (40%)	81 (60%)
Male	50 (45%)	60 (55%)
Total	103 (42%)	141 (58%)

No significant association χ^2 (1, N=244) = 0.86 was found between gender and completion and non completion.

Due to the results of study 1, which showed a significant association between age and likelihood of taking up a physical activity intervention, data were analysed for completion and non completion for age ranges.

Table 4.2– The association between age range and completion and non completion of participants (N=225)

Age Ranges	Complete (N=103)	Non Completion (N=122)
<30	20 (58%)	14 (41%)
31-45	27 (51%)	26 (49%)
46-60	20 (26%)	56 (74%)
61-75	12 (32%)	26 (68%)
>75	24 (100%)	0 (0%)
Total	103 (46%)	122 (54%)

Statistical analysis identified a significant association χ^2 (4, N = 225) = 46.01 between age range, completion and non completion. Those between 46-60 and 61-75 years were more likely to complete an ERS. Thus, differences between completion and non completion are associated significantly with age range, but not with gender.

4.3.2 Clinical health and its influence on completion

Completion levels and reason for referral are of particular significance to any physical activity intervention. The exact reasons why patients in clinical populations adhere or otherwise to date has not been explored in any depth (Woodward & Berry, 2001). Taylor *et al* (1998), in their study within an ERS, found that adherence was greatest in non-smokers and obese patients, although prior research indicated that those with greater body weight were less likely to adhere (Sallis *et al*, 1986). Thus the information to date is confusing. Therefore, specific information relating to the clients' attributes, in relation to medical diagnosis (reason for referral), has been sought, allowing a greater understanding of the concept of reason for referral and likelihood of completing an ERS.

Table 4.3 - Completers and non completers by primary reason for referral (N=196)

Referral Reason	Complete %	Non Completion %
Asthma/COAD (n=3)	2 (67%)	1 (33%)
Heart Surgery (n=3)	2 (67%)	1 (33%)
Heart Attack (n=13)	8 (62%)	5 (38%)
Arthritis (n=28)	14 (50%)	14 (50%)
Depression/Stress (n=4)	2 (50%)	2 (50%)
Blood Pressure (n=15)	7 (47%)	8 (53%)
Diabetes (n=20)	9 (45%)	11 (55%)
Overweight (n=56)	21 (38%)	35 (63%)
Back Pain (n=44)	16 (36%)	28 (64%)
Angina (n=9)	3 (33%)	6 (67%)

Due to the number of reasons for referral (N=25), and the diminutive numbers within some primary reasons for referral, not all have been analysed. It is evident

that a higher percentage of those referred following a heart attack (62%), heart surgery (67%) or asthma (67%) are likely to complete. Those who are referred for being overweight (38%) or with back pain (36%) are least likely to complete.

To avoid sample sizes that were too small to test statistically, primary referral reasons were categorised as for analysis in Study 1.

Table 4.4– The association between Referral Category and completion of participants (N=241)

Referral Category	Complete (N=101)	Non Completion (N= 141)
CHD Risk Factor	61 (43%)	80 (56%)
Mental Health	2 (50%)	2 (50%)
Musculoskeletal	32 (43%)	43 (57%)
Other	6 (25%)	16 (75%)
Total	101 (42%)	141 (58%)

No significant associations $\chi^2(3, N = 242) = 2.17$ were identified between referral category and completion and non completion, when tested with Pearson Chi-Squared. Although there is a frequency less than 5 for mental health, due to more than 80% of the data exceeding 5, this is acceptable.

4.3.3 Physical activity levels

Physical activity interventions are typically assessed by increases in physical activity levels of participants. Although participants are theoretical sedentary pre-intervention, amount and intensity of physical activity participation pre-intervention, as an indicator for completion of an ERS, is of interest as a variable, as part of the analysis that contributes to aim 1. Total physical activity participation pre intervention was not significant ($\chi^2(1, N = 52) = 0.31$ to completion of an ERS.

To develop more applicable outcomes, Metabolic Equivalents (METs) (from the Leisure Time Physical Activity Questionnaire (appendix 3) were transformed into estimated minutes of moderate exercise, by dividing the total participation MET figure by moderate intensity METs (5), and then multiplying this figure by 15 (minutes of exercise). This method of obtaining physical activity levels was preferred as it took into account all physical activity intensities i.e. mild, moderate and strenuous. Moderate intensity exercise was preferred due to its alliance with national recommendations (Wimbush, 1994; Whitehead, 1995; WHO, 2003 and DoH, 2005).

Table 4.5- Reported median minutes of moderate physical activity levels pre-intervention for those who completed and failed to complete an ERS (N=185).

	Pre intervention
Completers	63.0 ± 65.3
Non Completers	72.0 ± 59

Descriptive analysis indicated that those who completed the scheme were less active pre-intervention. Activity estimates were equivalent to a difference of 9 minutes of moderate intensity exercise for completers (63 minutes) and non completers (72 minutes).

In addition to actual levels of physical activity, participants were asked to answer yes or no to the question of were they participating in the recommended 30 minutes physical activity on most days of the week. Overall, 41.6% of participants considered themselves to be participating in the recommended levels of physical activity per week.

Table 4.6- Association between participants who perceive they are partaking in the recommended levels of physical activity per week pre-intervention and likelihood of completion of an ERS (N=185).

Recommended	Complete (N=70)	Non Completion (N=115)
Yes	29 (38%)	48 (62%)
No	41 (38%)	67 (62%)
Total	70 (38%)	115 (62%)

There was no significant association (χ^2 (1, N = 185) = 0.00) between perception of physical activity levels and completion of an ERS.

4.3.4 Social Support and its impact on completion of an ERS.

Previous research has shown the impact of supportive networks upon health behaviours (Stanton and McGee., 1996; Mohr *et al.*, 2001; Rutledge *et al.*, 2004) and has been found to be a significant factor in physical activity participation (Eyler, *et al.*, 1999; Young *et al.*, 2001). Moreover, social support has been qualitatively analysed within an ERS and was found to support other physical activity studies that state the importance of social support on adoption of behaviour change (Crone- Grant and Smith, 1999 & 2001; Crone-Grant et al., 2005; Wormald et al., 2005) and for older people (Hardcastle and Taylor, 2001; Stathi et al., 2003). The questionnaire utilised, separates support given from family and friends. It further isolates social support into family rewards and punishment and family participation as discussed in section 2.5.8.2 and therefore has been analysed as separate components.

Social support was measured pre- intervention (n=244) and post- intervention for individuals who completed the scheme (n=103). There was no significant difference between completion and non completion at an ERS and family participation, U= 3, Z= -2.24, p>0.05, friend participation, U=3, Z= -2.08, p>0.05, or family reward and punishment U=4, Z= -.348, p>0.05, indicating that support from family members and friends does not impact on completion of an ERS.

4.4 Summary of Findings

- Less than half of those who initially attended completed at 12 weeks (42%). 58% did not complete (i.e. attend a 12-week consultation).
- No significant differences ($p>0.05$) were found between gender and completion and non completion, when analysed with Pearson Chi-squared.
- Pearson Chi-Squared analysis identified a significant difference ($P<0.05$) between age range, completion and non completion. Those between 46-60 and 61-75 years were more likely to complete an exercise referral scheme.
- No significant differences ($p>0.05$) were identified between referral category and completion and non completion, when tested with Pearson Chi-Squared.
- Those who completed the scheme were less active pre-intervention. Activity estimates were equivalent to 7.4 minutes of moderate intensity exercise. However, when analysed with Pearson Chi-squared, these data were not significant ($p>0.05$)
- Overall, 41.6% of participants considered themselves to be participating in the recommended levels of physical activity per week pre- intervention.
- Perceived levels of pre- intervention physical activity were very similar for those who completed and failed to complete, there being no significant association ($p>0.05$).
- Family ($p>0.05$) and friend ($p>0.05$) participation and family reward ($p>0.05$) were not significant to completion and attendance at the ERS.

5.5 Discussion

The initial aim of this study was to identify associations of variables between those who complete an ERS with those who do not complete an ERS. Within this study, it was apparent that fewer than half those who attend the ERS complete it (42%). However, these completion rates are acceptable, compared to other ERS (Gidlow *et al*, 2005). Inconsistency in ERS completion rates may be due to numerous factors, including ERS protocols, whereby some are home based and

some facility based, and variations in intervention length (most being between 10 and 14 weeks) (Gidlow *et al*, 2005). This variation may lead to longer interventions reporting lower completion rates. Furthermore, the greater completion rates within this study may be due to differences in terminology of the phrase 'completion'; what constitutes a completer or non-completer and how to assess this has formed the basis of many debates (Dishman, 1986; Vitolins *et al*, 2000; Gidlow *et al*., 2005). Previously, completion has been specified as number of exercise sessions attended over the intervention's time frame (Taylor *et al*., 1998), or attendance at a final consultation (Lord & Green, 1995; Martin & Wool-May, 1999). Both methods are problematic. Although the first method allows records of attendance to the ERS, it does not take into account activities carried out external to the intervention, therefore total physical activity levels can not be reported. The second method only presumes that an individual is active, (it is presumed that if an individual attends a post intervention consultation that they are still attending the ERS). Conversely, it cannot be presumed that individuals who do not attend the 12 week consultation are inactive. It is possible that a certain proportion will have become physically active external to the ERS. Therefore, measured levels of physical activity participation at the 12 week time period for those who attend and do not attend a 12 week consultation are the ultimate indicator of physical activity levels.

Eden *et al* (1999) recommended that all primary care physical activity programmes should document why participants are not completing, to enable future evaluations to assess the reasoning behind it. This would allow large scale analysis of non completers and allow ERS's the scope to further improve the intervention. However, this is not a simple task; firstly, due to multiple reasons for non completion, secondly, participants who fail to complete are probably more difficult to contact to enquire about reasoning, and finally, individuals may not be forthcoming to members of staff with information they consider negative about the scheme. However, in response to the issue of non completion, variables were considered in relation to the participants' completion on this scheme's evaluation. These included gender, age, reason for referral, levels of physical activity pre-intervention, and levels of family and friend support.

Data indicate that 31-45 year old males are most likely to complete and 46-60 year old females are most likely to not complete. The significant factor in this analysis was age range ($P<0.05$) and not gender ($P>0.05$). Individuals, aged between 46 and 75 years, were significantly more likely to complete an ERS. This pattern is similar to other physical activity interventions, which have shown middle aged females to be most likely to complete (Biddle *et al.*, 1994). This has been suggested previously within an ERS (Lord and Green, 1995). However, this is the first time it has been shown significantly. Previous evidence has exposed its lack of significance (Taylor *et al.*, 1998).

Variations in age-related completion rates could be explained due to younger age groups being more active, independent of the intervention, through alternative facilities. These could include private gyms and specialised sporting clubs that are more apt for their age groups, providing the activities they require. Furthermore, the smaller numbers attending ERS's, from the younger age groups, results in a reduced demand for activities that will specifically appeal to them. This in turn will lead to a reduction in those of younger age groups, who are attracted to an ERS, as a method of increasing physical activity, and therefore completing it.

In contrast, the completion rates for older age (46+ years) groups' are greater and this may be due to greater likelihood of these individuals working part-time or being retired, a factor that Lord and Green (1995) reported increased adherence to an ERS. The fact that individuals work fewer hours would allow a more manageable time frame to attend classes (most of the ERS's classes occur during the day time). In addition, the exercise sessions within this ERS are designed specifically for older, less physiological able participants and they are mostly filled with these individuals.

Data analysis showed no significant associations between reason for referral category and completion of an ERS. It is proposed that this lack of significance, despite the large variance in figures in table 4.3 between those who do and do not complete, is due to categorisation of the data. Due to the problems discussed in chapter 3 with regards to attendance at an ERS and categorisation of referral reasons, it is proposed that a similar situation has occurred in this sample. As an

example, within the 'CHD risk factor' category, 'overweight' participants are less likely to complete. However, those who have suffered a 'heart attack' are more likely to complete; this may influence figures greatly. Taylor *et al* (1998) reported that overweight and smoking participants attended greater numbers of exercise classes than those referred for being obese or hypertensive. Within this study, all these referral reasons were categorised as 'CHD risk factor'. Thus the variance between referral reasons within a category is highlighted. This categorisation was essential to give sample sizes that were large enough to show significances. However, if larger samples were available, then further statistical analysis would have been carried out for separate referral reasons.

Inclusion criteria for referral onto the ERS specify that an individual is inactive (figure 3). This study has indicated not only that participants are physically active pre- intervention, but that those who do not complete the ERS's, are more active pre-intervention. This differs from previous research, indicating that ERS are more prolific at increasing physical activity in those who are already slightly active (Morgan, 2005). The implications of this include poor referrals from health professionals on to the scheme, as previously discussed by Johnston *et al* (2005) and non rigorous elimination from the ERS upon attendance to the initial consultation. In contrast, if those who are less physically active pre-intervention are more likely to complete an ERS, there is greater scope to gain the health benefits suggested by Taylor *et al*, (1998). Alternatively, more active participants may not require the supportive structure of the ERS to increase physical activity levels, as previously suggested by Sallis *et al*., (1992) in exercise adoption. This concept of more active participants not completing an ERS is possibly due to the content of the ERS classes, which may not be providing the correct intensity exercise. This is highlighted in one of the findings of this study, which found that moderate intensity physical activity was greater in completers and mild intensity was greater in non completers. The impact of this finding on ERS's is that non completers may perceive the physical activity classes within the intervention as too intense.

However, the amount of moderate intensity physical activity pre- intervention was not significant for completion of an ERS. Therefore, although referred individuals may not be inactive, it is likely that their levels of physical activity participation are such that they would still benefit from increases in physical activity. Furthermore, it is likely that there are a small number of individuals who are participating in large amounts of physical activity and the majority are less active. This is displayed in table 4.6, whereby fewer than half of those attending perceived themselves to be participating in the recommended levels of physical activity per week pre- intervention.

The second aim of this study was to compare pre- and post- intervention social support and its association with completion of an ERS. The concept of Social support was examined, due to previous research stating its importance for health and exercise behaviours (Eyler, *et al.*, 1999; Stevens *et al.*, 2000; Steptoe *et al.*, 2000; Young *et al.*, 2001), and within ERS's (Crone-Grant & Smith, 1999; 2001; Hardcastle & Taylor, 2001 and Crone-Grant, 2005). Within this study, family and friend participation and family reward and punishment were not significant for completion and attendance of the ERS. Due to social support not previously being analysed quantitatively within ERS, there are no comparable data. However, due to its previous importance from qualitative analysis in ERS and within other health related behaviours, it is possible that the tool utilised was not suitable within this ERS population.

4.6 Summary

The purpose of this chapter was to compare those who attend an ERS to those who complete the 12 week intervention. More specifically, this involved identification of pre- intervention age range, gender and physical activity participation and the associations between pre- and post- intervention levels of social support and completion.

This study has added to the knowledge of ERS, by indicating a significant relationship between age and completion of an ERS. Furthermore, gender and reason for referral were not significant for completion of an ERS. Finally, it

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appears that there are inconsistencies between referrals from health professionals and the inclusion criteria of the ERS, and greater training of health professionals is needed to satisfy the criteria. These findings should be taken into account during ERS design and implementation.

The importance of promoting attendance and completion of an ERS has been discussed. Ultimately, an ERS's objective is to promote long term physical activity participation and the aim of the subsequent chapter is to determine if they are an effective intervention for achieving this.

Study 1

- Referrals are more likely to be female and referred for diabetes or a heart attack. Overweight, obese and asthmatics are underrepresented in ERS compared to the borough population.
- Gender, age, reason for referral and month of referral are significant to attendance to an ERS. Females and those between 46-60 years referred for CHD or a musculoskeletal condition are more likely to attend.
- Referral rates in June were negatively associated with attendance and were greater than for any other month.

Study 2

- 42% completion rates of 12 week ERS.
- Age range and perceived level of physical activity pre intervention were significant to completion.
- Gender, referral category, friend and family support were not significant to completion of an ERS.

Study 3

Study 4

12 Month Tracking Study of participants who completed the 12 week exercise intervention

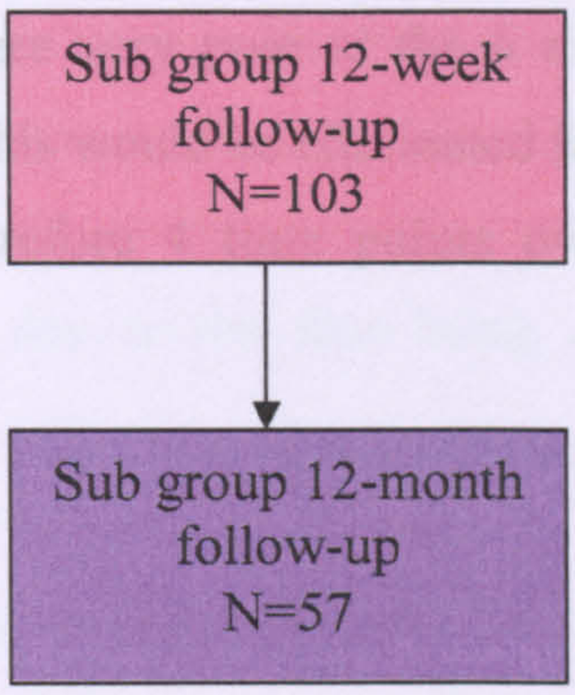

Figure 12- The Sample Population for study 3

5.1 Rationale for study

Due to limited research on the long term impact of ERS's (Taylor *et al*, 1998; Harrison *et al*., 2004) and the NQAF for ERS (2001) recommendations, a 12-month tracking study assessed long term physical activity levels following completion of an ERS. This study is the first to look, over a 12 month time period, at variables other than physical activity, such as reason for referral within ERS. In addition, comparisons of physical activity as a result of referral onto an ERS with National physical activity recommendations and proposed physical activity levels for completers of an ERS over 12-months have not been undertaken to date.

5.1.1 Aims for study

1. To investigate if an ERS is an effective method of increasing physical activity levels over a 12 month period for those who complete an ERS.
2. To establish whether gender, age range or reason for referral relate to physical activity levels over a 12 month period for those who complete an ERS.

5.2 Methodology

Following an analysis of those who attended and completed an ERS, participants who completed were tracked over a 12 month time period. Questionnaires were

posted to those who had completed the ERS and were subsequently sent at 6, 9 and 12 months. Reminder questionnaires were sent to those who failed to complete the questionnaire initially. No other attempt was made to contact this sample. Response rates were very poor at the 6 month time point and for this reason it was decided that this would be eliminated from the tracking study to give a larger sample size. Therefore 4 time points over a 12 month period were available for analysis.

5.2.1 Data Analysis

Raw data is presented alongside percentages to illustrate the differences between variables such as comparisons between participants who considered themselves to be participating in the recommended levels of physical activity over time. Percentage differences were used to demonstrate the differences in physical activity participation over time by age range and perceived physical activity levels. To determine whether there were any significant changes in the Metabolic Equivalent (MET), between the 4 time points across the 12 month period the Friedman test was used. Post-hoc analysis was carried out using Bonferonni corrected Wilcoxon tests to establish the location of any differences. Levels of physical activity were descriptively compared against national recommendations for physical activity participation.

5.3 Results

Of those initially referred (N=246), 103 (42%) completed and 57 (23%) participants replied to all 4 questionnaires and were therefore able to be tracked.

5.3.1 Long term physical activity participation

Increases in physical activity levels post- intervention have previously been acknowledged as the ultimate indicator of success in ERS's.

5.3.1.1 METs

The Godin and Shephard Leisure time Physical Activity Questionnaire uses METs as an indicator of physical activity levels, as discussed in section 2.5.8.1. For the purpose of this analysis, calculation of mild, moderate and strenuous physical activity was totalled, and due to the data being skewed, median scores were utilised.

MET physical activity data was corrected with Bonferroni Wilcoxen (0.05). Post hoc analysis revealed that there was a significant difference between physical activity METS at the initial and 12 week points ($z = -3.007$, $p < 0.05$). None of the other comparisons were significant (initial to 9 months ($z=-1.43$) and initial to 12 months ($z=-1.640$), $p>0.05$).

Table 5.1 Median METS of total physical activity levels at all stages (N=57)

Stages	Median METS of total physical activity
Initial	21.0
12 weeks	36.0
9 months	22.5
12 months	29.5

It is apparent that not all participants are sedentary pre-intervention. Pre-intervention physical activity is 21.0 METS, which is equivalent to 63 minutes of moderate intensity exercise (21.0 x 5METS). In addition, physical activity levels increase post- intervention (12 weeks) by 15 METS (equivalent to 3, 15 minute bouts of moderate intensity exercise). Surprisingly, following an expected reduction in levels at 9 months, they then increase at 12 months. At all time points, estimated METS of physical activity is greater than pre- intervention.

5.3.1.2 Perceived levels of physical activity

Participants were questioned as to whether they perceived themselves to be participating in the national recommended levels of 30 minutes of moderate activity 5 times per week. Percentage differences demonstrate the differences in perceived physical activity participation over time.

Table 5.2 Participants who perceived themselves to be participating in the recommended amounts of physical activity per week (N=57)

Recommended	Yes	No	Percentage difference
Initial	17 (41%)	24 (59%)	18% (N=7)
3 months	41 (84%)	8 (16%)	68% (N=33)
6 months	34 (81%)	8 (19%)	62% (N=26)
12 months	34 (72%)	13 (28%)	44% (N=21)

At the initial stage, a majority of participants were not participating in the recommended levels. However, this changed over time, with a switch in the majority at all the other time periods. It is also apparent that the percentage difference increased remarkably between the initial and 12 week stage and reduced subsequently in line with median METS of total physical activity (table 5.1). Interestingly, at baseline, a substantial percentage (41.0%) of the individuals identify themselves as carrying out the recommended amounts of physical activity, even though they are meant to be sedentary when they are referred to the scheme.

Interestingly, pre-intervention, 11 (19%) participants reported participating in 150 minutes of moderate intensity exercise per week (when estimated from total METS). This figure increased to 31 (54%) participants post intervention and reduced to 16 (28%) participants and 22 (38%) participants at 9 and 12 months respectively.

5.3.1.3 Comparisons to national recommendations

With a need to compare physical activity levels to those in the national recommendations, METs were converted into minutes spent participating in physical activity (as suggested in section 2.5.8.1).

Although table 5.1 indicates that physical activity levels have increased post-intervention and at 12 months (compared to initial assessment levels), it is clear from figure 13 that they are not obtaining the national recommendations for levels of physical activity of 2.5 hours (150 minutes) per week.

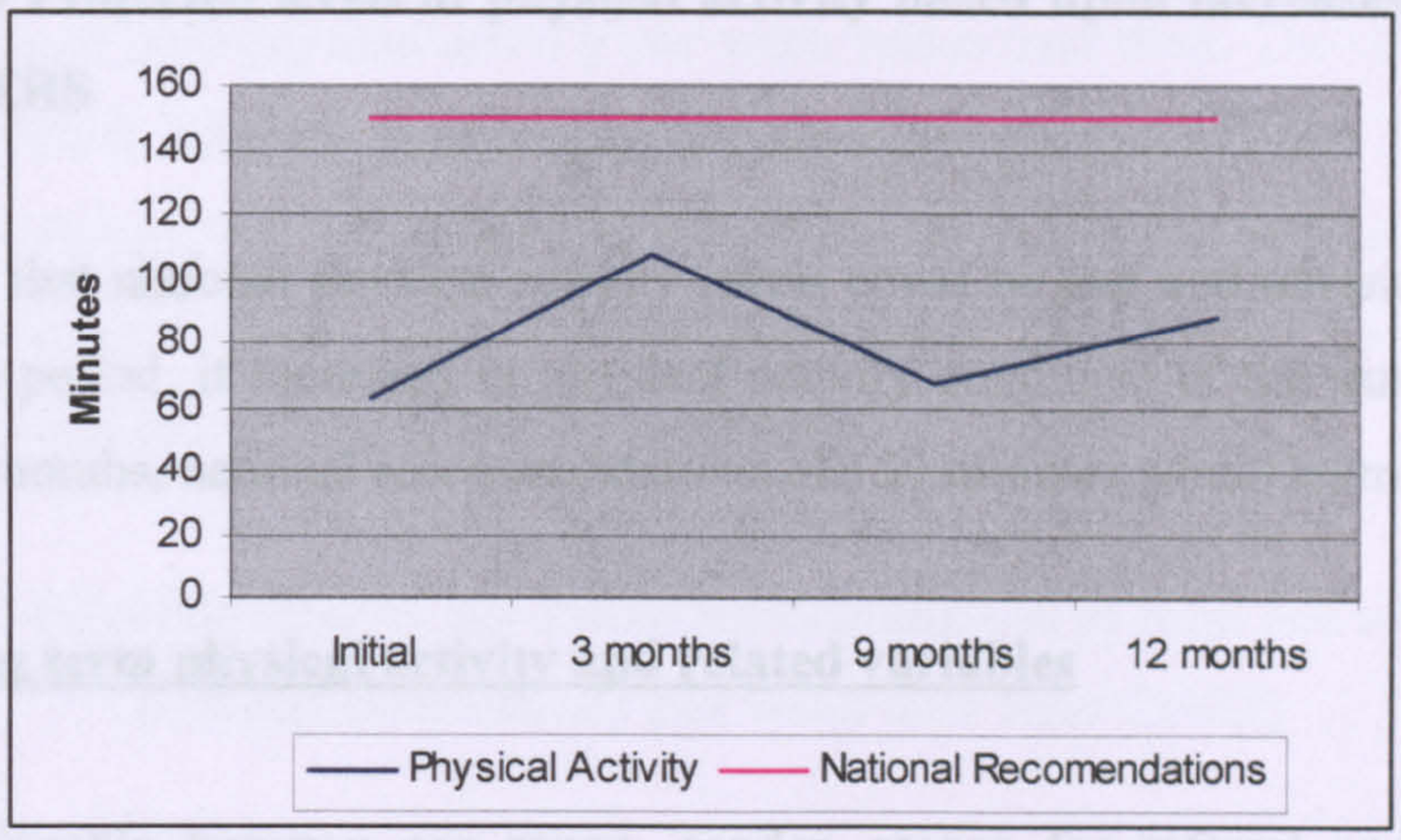

Figure 13 Median minutes of moderate intensity physical activity at all time points compared to national recommendations.

Levels of physical activity over 12 months were predicted for participants who complete a 12 week ERS.

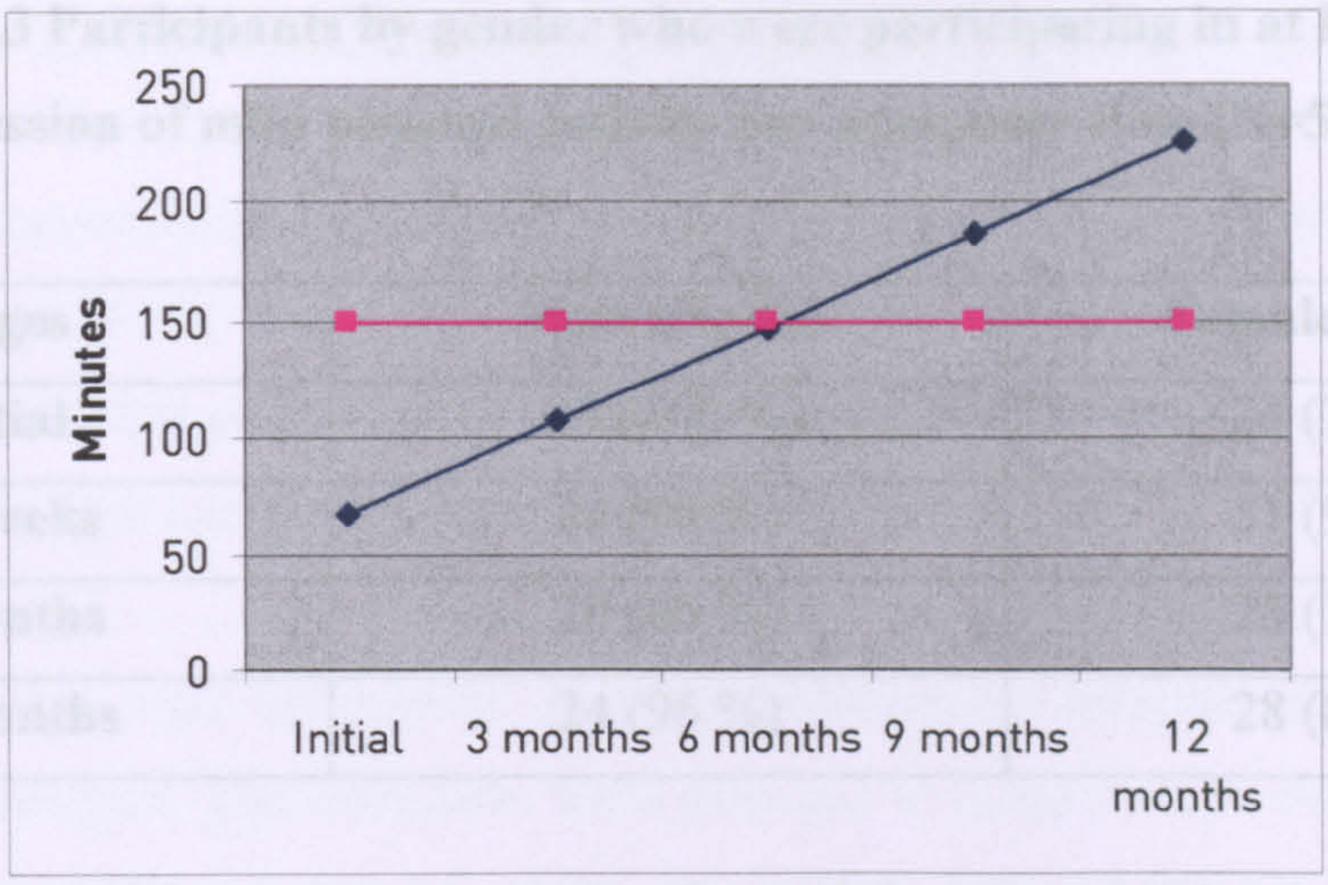

Figure 14 Projected levels of physical activity based upon increases during a 12 week ERS

It is clear that national physical activity levels could be met and advanced over a 12 month period, if increases in physical activity continued at the same rate. In fact, at 6 months, national recommendations of 150 minutes would be met.

5.3.2 Long term physical activity and related variables

The relationship between age range, gender, reason for referral and physical activity levels was established to identify reasons, if any, between short term increases (pre- and post- intervention), and long term decreases (12 weeks to 12 months) in levels of physical activity participation.

5.3.2.1 Age and Gender analysis

Previous positive associations between gender and age range and attendance and age range and completion, generated the requisite to investigate age and gender in relation to physical activity levels over time. Participants were included if they participated in at least one bout of mild physical activity per week. The identification of this inclusion criterion was based on this being a minimum quantity excluding them from a sedentary category.

Table 5.3 Participants by gender who were participating in at least one session of mild physical activity per week over time (N=57)

Stages	Male (N=25)	Female (N=32)
Initial	25 (100 %)	24 (75 %)
12 weeks	24 (96 %)	31 (97 %)
9 months	20 (80 %)	23 (72 %)
12 months	24 (96 %)	28 (88 %)

Table 5.3 reports that percentages of males and females participating in at least one session of mild physical activity per week varies over time. The data suggest no relationship between gender and participation in at least one session of physical activity over 12 month time period, although a greater percentage of males are active over time. Interestingly, all males are participating in at least one session of mild physical activity pre- intervention.

Table 5.4 Participants by age range participating in at least one session of mild physical activity per week over time (N=57)

Stages	<18-30	31-45	46-60	61-75	76+
Initial	0%	11 (85%)	19 (76%)	13 (76%)	1 (100%)
12 weeks	1 (100%)	12 (92%)	24 (96%)	17 (100%)	1 (100%)
9 months	1 (100%)	8 (62%)	19 (76%)	14 (82%)	1 (100%)
12 months	1 (100%)	12 (92%)	23 (92%)	15 (88%)	1 (100%)
% difference	0	-7	-16	-12	0

Differences in percentages between physical activity levels pre- intervention and at 12 months have been measured to determine long term changes in physical activity, following completion of an ERS. These are shown in the final row of table 5.4. The data suggest that greatest increases in participation in at least one bout of mild physical activity per week are for those aged between 46-60 years.

5.3.2.2 Clinical health and its impact on physical activity levels over time

Long term associations between clinical health and physical activity levels were of importance to the study, due to the preliminary results (studies 1 & 2) that showed that referral reason is significant to attendance, but not completion, of an ERS and therefore uncertainty to its importance in ERS.

Referral reasons were categorised due to several referral reasons, such as having very small samples. The categories were identical to those used in studies 1 and 2 and included 'CHD risk factors', 'Musculoskeletal', 'Mental Health' and 'Other'. Within this sample, 64.3% were referred for 'CHD risk factors' (N=36). 30.4% were referred for 'musculoskeletal' conditions (N=17) and only minimal numbers had been referred for 'mental health' (N=1) and 'other' (N=2). Due to the minimal numbers referred for the latter two categories, they were eliminated from this section of the analysis.

Table 5.5. Those who were participating in at least one session of mild physical activity per week over time and referral category (N=52).

Stages	CHD	Musculoskeletal	Total
Initial	28 (77.8 %)	12 (70.6%)	40
12 weeks	35 (97.2%)	17 (100%)	52
9 months	28 (77.8%)	13 (76.5%)	41
12 months	33 (91.7%)	15 (88.3%)	48

It is apparent that there are modest differences between minimal levels of physical activity over time and referral category.

5.4 Summary of Findings

- Physical activity levels at baseline were 21 METS which is equivalent to 63 minutes of moderate intensity exercise.

- Physical activity levels are significantly greater post intervention than at baseline ($p<0.05$). This is equivalent to 3 fifteen minute bouts of moderate intensity exercise.
- 12 months after commencing an ERS, physical activity levels are greater than at baseline. This is equivalent to fewer than 2 fifteen minute bouts of moderate intensity exercise and is not significant.
- Pre- intervention, 41% of the sample considered themselves to be physically active. This increased to a maximum of 84% at 12 weeks and 72% at 12 months.
- Physical activity levels are not meeting the national recommendations for physical activity levels at any time point.
- A greater percentage of females (75%; 97%; 72% and 88%) are participating in at least one 15 minute bout of mild physical activity at all time points (table 5.3).
- There is very little difference between the percentage who are participating in at least one 15 minute bout of mild physical activity pre- intervention and at 12 months, when broken down by age range (table 5.4)
- Physical activity levels fluctuate over time for those referred with CHD risk factors and musculoskeletal conditions. However, there is very little difference between the two referral categories.

5.5 Discussion

The initial aim of this study was to determine an ERS's effectiveness in increasing physical activity levels over a 12 month period. Findings reported that, whilst physical activity levels were significantly increased post intervention (12 weeks), this increase was not sustained and had decreased 12 months following referral (21 METS at baseline and 29.5METS at 12 months). However, participation at 12 months is still greater than at baseline, although not significantly ($p>0.05$). This is similar to previous research that showed significant short term (8 weeks (Taylor *et al.*, 1998) and 6 month (Harrison *et al*, 2004)) increases in physical activity, and non significant increases in physical activity at 37 weeks (Taylor *et al*, 1998) and 12 months (Harrison *et al*, 2004).

On completion of the intervention, physical activity levels have increased by the equivalent of 3 fifteen minute bouts of moderate intensity activity from 21.0 METS to 36.0 METS. This is considerably lower than national physical activity recommendations of 30 minutes of moderate activity on 5 or more days each week (Department of Health., 2005). Furthermore, at 12 months, average physical activity levels are equivalent to less than 2 fifteen minute bouts. This is only a fifth of the nationally recommended levels. Increases in physical activity over long time frames are vital, due to the unsustainable physiological changes as a result of being physically active (Ha *et al.*, 1998; Scottish Intercollegiate Guidelines Network, 2001). Moreover, the aim of an ERS is to increase physical activity levels of sedentary participants to gain health benefits. Thus, if significant increases in physical activity are not being met, the effectiveness of ERS's has to be questioned.

Projected estimates of physical activity were reported within this study and it is feasible that that individuals could be meeting the recommended levels following a safe continual programme at a 6-9 month time point. Figure 16 shows an estimate of levels of physical activity, if increases seen between initial and 12 weeks are continued linearly over a 12 month time frame at a rate of 45 minutes per 12 weeks, which is seen between the first two time points (pre- and post-intervention). It is clear that national recommendations would be achieved and exceeded between 6 and 9 months if this took place, to an estimate of 226 minutes per week of moderate physical activity. This finding advocates ERS's having extended time frames to encourage longer term participation and meeting of the national recommendations. After all, short term interventions should not be expected to bring about long term changes, as chronic illnesses need to be treated with chronic interventions (Brownell *et al*, 1986). Thus a 12 week intervention is not going to be ideal for increasing physical activity levels of those who are chronically ill and have been sedentary for long periods of time, as is occurring at present.

The lack of significance of physical activity levels at all time points and the fact that national physical activity recommendations are not being met highlight the

need to question the effectiveness of an ERS as a method of increasing physical activity levels. However, the NQAF for ERS (DOH, 2001a) recommended that changes in physical activity levels were more significant than fitness per se (p. 46). Thus it may be argued that any increase in activity levels are beneficial and should be seen as an indicator of success. In addition, the lack of significance in physical activity levels over time should not come as a surprise due to the patients referred onto the scheme being clinically diagnosed, chronically ill, older (compared to the general population) and sedentary. Furthermore, it is estimated that six out of ten men and seven out of ten women are not reaching recommended levels of physical activity, to achieve health benefits (DoH, 1999b). Therefore, we are being incredibly optimistic to expect that short term physical activity interventions are going to accomplish increases in physical activity levels over and above the 60% and 70% (DoH, 1999b) they are currently achieving.

Following results from study 2, which reported that 41% of the sample considered themselves to be physically active pre- intervention, this study has found that, post- intervention, 84% considered themselves to be participating in the recommended levels of activity. Subsequently, at 12 months, this has reduced slightly to 72%. These findings are in line with reported levels of physical activity, which are at a maximum at 12 weeks and reduce at 12 months (although not to pre- intervention levels). This is positive for the LTPA Questionnaire, increasing confidence in the measure within this population.

The secondary aim of this study was to determine associations between levels of physical activity over 12 months and gender, age range and reason for referral. It is apparent that a greater percentage of females are participating in at least one 15 minute bout of mild physical activity at all time points within the ERS framework. One 15 minute bout was the classification for not being sedentary, although it is clear that this is well below the national recommendations (DoH, 2004). However, it is still evident that females are more active post- intervention than males. This would suggest that partaking in an ERS was more beneficial for females' long term physical activity participation, than for males. The reasoning for this may be due to a more positive experience during the ERS intervention for female participants. This could be as a result of more suitable timing and intensity of

exercise classes and greater similarities between participants, due to a greater proportion of referrals being female. In addition, due to exercise instructors employed by the ERS being mainly female, this may encourage participation by females and non participation by males.

In addition, descriptive analysis showed very little difference between the percentage who are participating in physical activity pre- intervention and at 12 months, when broken down by age range. This suggests that the intervention is no more successful in increasing physical activity participation for certain age groups, once an individual has completed the intervention. This is positive for the ERS, as it indicates lack of preference for ages and suggests that the ERS provides a service suitable to meet the needs of all.

When physical activity levels were considered alongside reason for referral, it was apparent that physical activity participation fluctuates somewhat over time for those referred with CHD risks factors and musculoskeletal conditions. However, there was little difference between the referral conditions at any time point. This lack of variation indicates that the ERS is no more successful in increasing physical activity levels for those of differing referral reason. Encouragingly, this implies that the ERS does not have preference for differing referral reasons. In addition, it suggests that different referral reasons have little variance in their requirements during participation on an ERS.

5.6 Summary

This study provides information relating to long term physical activity participation following completion of an ERS. Long term sustainability has been characterised within an ERS population. It is apparent that an ERS has the opportunity to significantly increase physical activity levels post- intervention, although not beyond 3 months. Furthermore, physical activity levels are not reaching national recommendations at any time point. Age range and reason for referral seem to have little impact on physical activity levels long term.

Long term physical activity levels post- ERS have not been identified previously in relation to age and reason for referral. It is apparent that ERS are effective in increasing physical activity participation of clinically diagnosed populations short term. ERS interventions must be transformed to increase long term sustainability of behaviour changes.

In addition to quantitative analysis to determine why an ERS cannot sustain a physically active lifestyle, study 4 will use qualitative methodologies to explore participants' experiences during an ERS. Non quantifiable outcomes may provide a meaningful explanation for this inability to maintain a physically active lifestyle.

Study 1

- Referrals are more likely to be female and referred for diabetes or a heart attack. Overweight, obese and asthmatics are underrepresented in ERS compared to the borough population.
- Gender, age, reason for referral and month of referral are significant to attendance to an ERS. Females and those between 46-60 years referred for CHD or a musculoskeletal condition are more likely to attend.
- Referral rates in June were negatively associated with attendance and were greater than for any other month.

Study 2

- 42% completion rates of 12 week ERS.
- Age range and perceived level of physical activity pre intervention were significant to completion.
- Gender, referral category, friend and family support were not significant to completion of an ERS.

Study 3

- Physical activity levels are significantly greater post intervention than at baseline
- No significance increases in physical activity levels at 12 months
- Physical activity levels are not meeting national recommendations
- No significant differences were found in friend and family participation support and physical activity levels over 12-months

Study 4

The experiences of overweight populations on an ERS

6.1. Rationale for study

Overweight and obesity is one of the fastest growing 'lifestyle' diseases and therefore public health problems in the UK. It is strongly associated with several serious illnesses (WHO, 2003; HOC, 2003-04). Overweight individuals are under represented within this ERS, compared to the borough population, and are significantly less likely to attend the ERS or participate in physical activity (Brownell *et al.*, 1980). Furthermore, a greater percentage of overweight participants are not completing than completing the scheme. Together, these factors give the rationale for participants referred for weight control to be an important sub group to investigate.

Hardcastle and Taylor (2001) highlighted the need for ERS to listen to participants' experiences during the intervention. In addition, tracking groups of overweight participants within ERS's is unique. With the current governmental emphasis on tackling obesity, and the requirement for PCT's to develop obesity care pathways, this evidence is particularly timely and is of practical relevance.

The National Diet and Nutrition Survey (Vol. 1) (2002) reported that, within the UK, 24% of females and 10% of males said they were dieting to lose weight ($p<0.01$), and women aged between 25 and 49 were significantly more likely to be dieting to lose weight than males of the same age ($p<0.01$). More specifically, 51.2% of the Wigan borough's population are overweight or obese (Wigan and Bolton Health Authority Survey (2001), and 11.8% (N=643) of the total patients referred over a 5 year period (N=6641) were referred to the ERS for being 'overweight'. Of these, 51.1% did not attend (DNA). Overall, a total of 25% (N=1634) of patients referred onto the scheme were overweight, when taking into account all referral reasons.

6.2 Interventions to decrease the prevalence of overweight and obesity

Previously, the reduction in overweight and obesity has occurred as a by product of more generic policies to prevent CHD (DoH, 2000a) and diabetes (DoH, 2001).

However, more recent policies (NAO, 2001; Mulvihill & Quigley (HDA) 2003; HOC, 2003-04), targeting a reduction in the obesity epidemic, have evolved, and it is anticipated that the development of national interventions specifically for the reduction in overweight and obesity will result.

It has previously been suggested that weight loss interventions are unsubstantiated, due to lack of research into their long term success (Noel & Pugh, 2002; HDA, 2003). Of 13 reviews relating to weight loss interventions, only 3 followed up participants for a year or more (HDA, 2003). Furthermore, although interventions have shown reductions in weight as a result of diet alone, physical activity alone and a combination of diet and physical activity, there is conflicting evidence from the publications as to which produces the greatest weight loss (HAD, 2003).

6.3 Aims of study

1. To investigate overweight participants' experiences of an ERS.
2. To gain an insight into an overweight population's perception of others in the process of increasing physical activity participation and weight loss.
3. To determine what participants expect to achieve during a weight loss intervention and if these expectations are met.
4. To establish factors of importance to overweight populations for maintaining a physically active lifestyle.

6.4 Methodology

6.4.1 The New Weighs Intervention

Within this ERS, a programme operates that is specifically for those who are placing themselves at health risk by being above their recommended weight. The intervention runs over a 12-week period, during which time individuals spend 45 minutes per week learning the benefits of exercise: different types such as walking, mobility, and posture and why they are beneficial to each individual; how to exercise safely at home and the benefits of exercise for weight loss. They also attend a session with a dietician, who spends 45 minutes providing

information on food types and choices such as salt, sugar, fats and fibre. Food taster sessions are encouraged to introduce the participants to a wider variety of food types. More importantly, there is an emphasis placed on 'healthy eating' as opposed to 'diets'. In addition to the educational aspect on diet and nutrition, there is the choice of two exercise sessions to attend. These are held by a qualified exercise instructor and attendance is dependent on the fitness of the individual. The participants are also weighed on a weekly basis. The overall aim of the programme is a 10% weight loss in participants over the 12-week period; an aim, which can improve glycaemic control (Jung, 1997) and reduce the risk of heart disease, through acquired reductions in blood pressure and cholesterol levels (WHO, 2000).

The intervention is run 3 times throughout a year, during January, April and September and is available to those who have a Body Mass Index (BMI) >25. The 'New Weighs' course in this study, was to start at the end of January 2004. One week prior to the start date, a pre-assessment was held, during which the participants could meet the health and exercise professionals who were running the course, along with having their targets set for the subsequent 12 weeks. In addition, it was to enable certain individuals to re-visit their health practitioner, prior to exercise commencement if it was deemed necessary.

6.4.2 Sampling for Focus Groups

Due to the nature of the study, which utilised qualitative focus groups, sampling was purposeful, as participants who would provide meaningful information relating to the study's aims and objectives were essential. The sample was chosen from all those who attended the New Weighs course from January 2004 and respondents were recruited through attendance at the pre-assessment, which occurred 1 week prior to the start of the course. Verbal invitation was given a week prior to the focus group date, providing they met the sampling protocol, the only criterion of which was that they had been referred through a health professional onto the ERS and therefore were part of the ERS. Since participants are, in some instances, allowed to self refer, it was essential that this criterion was controlled.

Due to the impact of social class on the prevalence of overweight and obesity (Health Survey for England, 1999), leisure centres which are to host the New Weighs intervention are decided on through areas deemed most in need, through numbers on waiting lists from referring health professionals. Sampling across localities, in which the discussion groups took place, were planned to gain socio-economic diversity however, information on economic status was not collected. In addition, due to the diminutive ethnic diversity within the borough, as discussed in chapter 2, ethnic minority groups were not specifically sought after for this research. The fact that ethnic diversity is absent from the groups is typical of the area in which the research was carried out.

In this instance, three New Weighs intervention groups were running throughout the borough, and to gain a broad, unbiased sample group, all were approached for sampling. The three intervention groups from here on are identified as Groups A, B and C.

Between four and eight people per focus group has been suggested by Kitzinger (1995). However, this was not always possible within this evaluation. The objective within each of the three groups was to obtain between eight and ten participants to allow for an expected reduction in numbers over time, which would still leave a suitable quantity for a discussion group. The initial number of participants selected was 28, of whom 10 were attending Group A, 10 in Group B and 8 in Group C.

Table 6.1 Sample profile for study 4

Participant	Group	Additional reason for referral	Age	Referring health professional
F1	A	Back Pain/ Stress/Depression	47	GP
F2	A	Diabetes/Anxiety	52	GP
F3	A	BP/ Diabetes	63	GP
F4	A	Sleep Apnoea	29	PN
F5	A	Anxiety/Stress/Depression	29	GP
F6	A	BP/ Diabetes	48	GP
F7	A	Heart Attack/ Diabetes/ BP	55	GP
F8	A	BP/ Diabetes/Arthritis	64	PN
F9	A	/	/	/
F10	C	Diabetes/ Arthritis	/	GP
F11	C	Diabetes/ Arthritis	57	GP
F12	C	Arthritis	77	GP
F13	C	Diabetes/ Arthritis	/	DN
F14	C	/	/	/
F15	C	Diabetes	63	GP
F16	C	Arthritis	58	/
F17	C	Anxiety/ Stress	60	/
F18	B	/	54	PN
F19	B	Asthma/ Angina	50	PN
F20	B	/	62	GP
F21	B	Diabetes	52	PN
F22	B	/	73	/
F23	B	BP/ Fitness	64	PN
F24	B	BP/ Osteoarthritis	68	GP
M1	B	CHD/ Diabetes	61	GP
M2	B	/	55	PN
M3	B	Diabetes/ Angina/ Fitness	60	PN
M4	B	Epilepsy/ Asthma	64	PN

Participants were mostly female (86%, N=24), mean age 57 years, and this was reflective of the intervention as a whole. All had been referred for being overweight or obese (100%, N=28) by general practitioners (N=12; 42%), practice nurses (N=8; 29%) and others (N=8; 29%). In conjunction, 79% (N=22) were referred for additional complications such as diabetes (N=12; 43%), elevated blood pressure (N=6; 21%) and arthritis (N=5; 18%). Smaller numbers were referred for angina (N=2; 7%), asthma (N=2; 7%), epilepsy (N=1; 3%) and osteoarthritis (N=1; 3%). This similarity within the participants was advantageous to the focus group discussions, increasing confidence to express personal views (Shaw, 1999). Activity levels were measured by the International Physical Activity Questionnaire (IPAQ) (2002), prior to commencement of the course, as part of the altered questionnaire used by the ERS. Of those who completed the IPAQ, 86% of participants were completely sedentary; only 2 (7%) admitting to partaking in any vigorous or moderate physical activity. In addition, the amount of time the participants spent sitting, on a daily basis, ranged between 0 and 52 (mean 15.2) minutes per day. This latter figure is important in this instance as, apart from those who partake in no physical activity per se, those who move very little, as when seated or lying, for longer periods of time are going to be less active than those who partake in no physical activity, but do, however, spend a lot of time standing and moving.

6.4.3 Pilot Focus Groups

Pilot focus (N=2) groups took place between July and October 2003 with a mixed gender, age, cardiac rehabilitation group (N=15). There were 2 purposes to this; firstly to gain experience of moderating, and secondly to test the proposed questions within a same disease group. Vital lessons were gained as a result, relating to holding focus groups, and this experience was of benefit during the reported focus groups.

Following a 2 month time period for reflection, the reported focus groups took place over a period of January to April 2004.

6.4.4 The Focus groups

Verbal invitation to attend was given a week prior to the focus group date. The groups were arranged so that as little inconvenience as possible was placed upon the participants. Groups were held in three different locations throughout the borough and in the same location as the exercise classes, and were held either immediately prior to, or after, the exercise classes. The premise for this is that people are more likely to turn up for focus groups if they take place in a familiar setting (Barbour & Kitzinger, 1999). To encourage conversation, a relaxed and comfortable environment was chosen e.g. leisure centre bar or cafeteria, where there was comfortable seating and refreshments. Furthermore, the seating was circular in nature to avoid a hierarchy between moderator and participants. The discussion groups were to last 45 minutes, again mostly for ease of the participants, as they were already attending the leisure centre for a 2-hour period, excluding the discussion group.

Focus groups took place at 0 (stage 1), 6 (stage 2) and 12 weeks (stage 3), thus at the start, mid point and end of the intervention, to follow change over time. It was the aim of the research to carry out a tracking focus group study and this time line allowed for the tracking study to occur. Focus groups were terminated at the end of the 12 week intervention, when all 3 groups had carried out initial, midpoint and final focus groups. Reminder letters were sent to the participants 1 week prior to the discussion groups taking place, due to the time lapse (6 weeks) in between each group.

Table 6.2. Numbers participating in focus groups at each stage

	Group A	Group B	Group C	Total
Participants invited	10	11	8	29
Stage 1 (0 weeks)	5	6	4	15
Stage 2 (6 weeks)	4	6	2	12
Stage 3 (12 weeks)	6	3	2	11

As shown in table 6.2, participants in secondary and tertiary groups were not always available and therefore could not attend. Low participation was due to several participants, who dropped out during the New Weighs intervention, and although they were still invited to attend focus groups, they did not. Others did not attend due to illness and commitments, such as grandchildren and work, meaning they were unable to attend.

Mean age of those who attend 2 or more focus groups was 52.7 years which is lower than mean age of entire sample group. Mean pre intervention total physical activity participation (as estimated by IPAQ) was 12.5 minutes. 87% were completely sedentary, and sitting time ranged between 8 and 25 minutes (mean 14.5) minutes per day. Therefore, it was possible to propose that the opinions reported, represent that of the entire sample due to characteristic consistencies (other than mean age) between those who attended <2 focus group and ≥2 focus groups.

Consent forms were completed by the participant at the first opportunity and by the researcher and, where possible, an independent witness. An example of the consent form used is in appendix 5.

6.4.5 Focus Group Questions

It was decided that questions within the focus groups should change over the time frame, firstly due to the nature of the study, where change over time was being assessed; as participants' experience of the intervention transformed, it was important to follow this. In addition, using different questions allowed a more varied discussion in the limited time frame, and finally to prevent monotony on behalf of the participating clients. Although the focus group protocol insinuated was semi structured, the topic of conversation often led to alternative and additional questions being asked.

Questions used within the focus groups evolved as a result of discussion groups with members of the research team and stake holders. Initial questions were used to encourage participants to speak about themselves and their physical activity

levels. Following on from this, participants were asked introductory questions relating to the exercise habits they were currently keeping, and what they expected to get out of this intervention (questions 2 and 3). Subsequently, questions relating to the patients' perceptions of physical activity and themselves in a physically active environment were posed. In addition, in line with Steptoe *et al.*, (2000) and Williams *et al.*, (2004), participants' perception of social support was investigated. Finally, barriers to partaking in physical activity were investigated as essential to the evaluation.

Focus groups were stopped when focus groups had occurred over the 12 week period and no new themes were being exposed by the content of the discussion.

Initial Focus Group Questions (stage 1)

1. How did you end up being referred to the New Weighs course? Why, who by?

2. How active a person would you consider yourself?

3. What are your goals whilst on the Steps to Health Scheme? How confident are you that you are going to achieve your goals?

4. What does the term 'social support' mean to you?

5. How do you think social support can help/hinder your participation in physical activity?

6. Which members of your family participate in exercise/physical activity?

7. Would it help you if your family and friends exercised/ took part in physical activity?

8. Do you feel you get support from within the exercise referral setting e.g. the exercise group, the exercise officers, the staff at the leisure centres? What type of support is it?

9. How does this make you feel?

10. What factors will make it easier for you to take part in physical activity?

11. What factors will make it more difficult for you to take part in physical activity?

12. Are you looking forward to the next 12 weeks on the New Weighs course?

At the second stage, questions were changed to include questions specific to the past 6 weeks, whilst they have been on the intervention. Topics included knowledge of exercise, outcomes of being physically active and barriers to being physically active within the intervention.

Secondary focus group questions (stage 2)

1. How are you feeling now you are half way through the New Weighs programme?
2. Have you found the exercise enjoyable?
3. Have you learnt anything about exercise that you didn't know previously?
4. How has the scheme altered your lifestyle/ health; has anything else in your life changed since you started the course?
5. We were talking last time we met about how other people made you feel, do you feel that people perceive you differently since you've been coming to the sessions?
6. Arrange the following words in order of their importance for your involvement in physical activity?
    a. Encouragement
    b. Support
    c. Criticism
    d. Reward
    e. Complaints
    f. Money
    g. Childcare
    h. Transport
7. What has made you want to continue coming to the sessions? Have any of you not been able to make any of the New Weighs sessions?
8. How are you feeling about yourselves since you have been on the scheme?
9. What makes you want to return to the classes each week (motivation, support)
10. How positive are you feeling at the moment that you will complete the next 6 weeks?

Finally, at the third stage, at 12 weeks, questions were centred on meeting goals and how individuals were feeling as a result of the past 12 weeks, and how they were going to manage their lifestyles from now on.

Final focus group questions (stage 3)

1. Pictures- identify how you are feeling today after completing the intervention
2. How are you feeling after 12 weeks on the intervention?
3. Have the goals that were set on commencement of the course changed at all?

6.3.6. Limitations of Focus Groups

Difficulties found during the focus groups related mostly to quality of taping, due to subjects talking at the same time, even though emphasis was placed to avoid this at the beginning of each group. In addition, subjects did not always attend, and on several occasions would turn up late during the discussion, which further made it difficult to control the quality of the group. When subjects are not receiving incentives to attend, it was difficult to lay down strict procedures within the groups.

Although not the objective of this study, inconsistency in attendance at the focus groups over time meant that participants could not be tracked individually over time which is disappointing. In addition, there were no gender comparisons due to females only attending more than one focus group over time. Furthermore, non attendance at the focus groups resulted in fewer opinions being sought. However, total numbers from Groups A, B and C were acceptable for a focus group setting (Kitzinger, 1995) and therefore it is proposed that the reported findings represent all those who attended at least an initial focus group. Lastly, due to the large number of participants with multiple co-morbidities, it was not possible to separate each diagnosis to determine how this influenced the findings.

6.4.7 Data Analysis

All discussions were tape recorded, with the permission of the subjects and transcribed verbatim for analysis. Based on these transcriptions, content analyses of themes were undertaken as suggested by Scalon *et al.*, (1989).

Data were co-analysed by a fellow postgraduate research student to identify themes in the content of the transcribed discussions, the benefit of which is to increase reliability of results (Silverman, 2001). This was done separately to become familiarised with the content of the transcripts and to identify themes from the narrative. Subsequently, the two postgraduate researchers collectively discussed the content of the transcriptions and the themes that had arisen during the group conversations. This analysis was both inductive and deductive; certain themes were highlighted in the studies aims and focus group questions, and were therefore presumed to be topical. Others were driven by the data derived from the focus groups. From this conversation, primary data themes were listed and successive secondary themes.

6.5 Results

During independent and co-analysis, it became evident that there were themes evolving through the focus groups. Conversations that were of significance to the discussion were highlighted, coded and then positioned with similar conversations. It was on the basis of this method that the themes evolved.

It is proposed that the similarities i.e. age, clinical health, ethnicity and area of residence, led to a comfortable atmosphere between the participants which was conducive to open and free conversation. This was more apparent as the participants relationships improved as they progressed through the 12 week intervention.

Themes that emerged as a result of the discussion groups relate to experiences of being overweight in a physically active environment, expectations and achievements through the intervention, and support from significant others to

participate in physical activity. Some of the themes that emerged were unanticipated and not related to the questions asked, such as the emphasis on same disease group classes and the consequence of being weighed during the intervention. However, it appears that certain themes appeared on more than one occasion and were therefore considered important to the study.

Experiences of being overweight	Physiological and psychological problems. Perception of others
Previous experience of physical activity	Sedentary lifestyle due to health problems and family commitments.
Opinion of referring health professional	Doctor's opinion respected. However, lack of time and conflicting information are negative
Outcomes of success during a weight loss intervention	Physiological and psychological goals of participating in ERS. Confusion, depression and despondency when weight loss not achieved. Goals of weight loss and fitness achieved during intervention.
Experience of being weighed	Praise and support, encouragement from others. Self consciousness
Benefits of same disease group	Support, encouragement and motivation from others in same situation. Positives include sharing situations, company, friendly, competitiveness and enjoyment
Determination to continue learned behaviours	ERS given initiative, energy and push to continue. Previous excuses obsolete Others interest in their success is positive.
Behaviour knowledge	Walking/exercise beneficial. Moderation, support from ERS staff.
Family support	Criticism from family. Family commitments as a female.

Figure 15- Themes from focus groups 122

6.5.1 Experiences of being overweight

It has previously been suggested that obese individuals have lower physical self perceptions than individuals of normal weight (Fox, 1990). During an initial group, the discussion turned to the problems of being overweight whilst in public places. The group concurred that, due to the seating, it became awkward to travel by airplane, as well as to socialise in certain public places, and this led to embarrassment. The following conversation resulted in an insight of overweight individual's experiences and how they are perceived.

> ***INT: "And does that make you feel worse (the seating not being adequate to suit their needs)?"***
>
> *"Very self-conscious.....Terrible, terrible"* **(Female 7, 55 years, G1)**
>
> *"No confidence in yourself because you think is everybody watching?"* **(Female 8, 64 years, G1)**
>
> *"We know they're not, but you feel that they are, don't you"* **(Female 9, unknown age, G1)**
>
> *"Yeah"* **(Female 8, 64 years, G1)**
>
> *"You feel everybody's smirking and laughing at you. You're the butt of everybody's jokes really"* **(Female 7, 55 years, G1)**
>
> ***INT: "Is that how you feel?"***
>
> *"Yeah, you're the butt of everyone's jokes"* **(Female 7, 55 years, G1)**

Following on, it became apparent that the social problems associated with being over weight lead to psychological outcomes typical of physical self perceptions. In a discussion relating to confidence in public places, the following conversation evolved.

"I don't know why people say "they're not bothered about being fat"; we all say that to make us feel better, but we are bothered" **(Female 8, 64 years, G2)**

(Talking together)

"You have to be jolly, say you're fat and happy. I defy anybody who's fat and happy" **(Female 9, unknown age, G2)**

> *"When I shut my front door to come out, this smile goes on, but when I go in it's a different matter altogether. Not that I'm not normally happy, but things do prey on your mind and you do worry about things, and it's only behind your own front door, where you can really think about them or talk about them and let how you feel about them come out. When you go outside, people don't want to know".* **(Female 7, 55 years, G2)**

Furthermore, individuals endured the physical obstacles of being over weight.

INT: "Do you feel that you have to make more of an effort?"

"I think it's a problem,……" **(Female 9, unknown age, G2)**

"If something's on the floor, I'd say it's my arthritis, but whether it is or not I don't know, if I wasn't so fat, I'd probably get down and pick it up" **(Female 8, 64 years, G2)**

"You probably could get down to pick it up" **(Female 9, unknown age, G2)**

"Yeah. It stops you having an easy way of life doesn't it"? **(Female 8, 64 years, G2)**

"It's restricting" **(Female 9, unknown age, G2)**

"It is restricting……It is frustrating" **(Female 8, unknown age, G2)**

"Hopefully, we're going to get fitter and slimmer" **(Female 9, unknown age, G2)**

"Hopefully" **(Female 7, 55 years, G2)**

"...and happier" **(Female 8, 64 years, G2)**

These negative feelings were carried in to the exercise environment showing limited exercise identity. One of the participants, in her initial group, commented that a barrier to exercising was others' perceptions of her in a physically active environment.

> *"I will never join a slimming club, or go to a gym, or join a class, for the simple reason that you always suspect that people are looking at you and looking down their nose at you"* **(Female 7, 55 years, G1)**

When asked if it would make it easier that everyone was in the same situation i.e. overweight, one participant responded;

> *"It's just the way I want people to perceive you as well"* **(Female 4, 29 years, G1)**

It was also apparent that lack of confidence was more evident in novel environments, as opposed to lack of confidence per se. Individuals, who considered themselves confident in other areas of their life felt they had to become "someone else" in an exercise environment. This is comparable to findings by Hardcastle and Taylor (2005).

> *"I think it depends as well on the position you find yourself in. I mean we're talking about going to Slim Fast and coming to gyms and things like that, because we don't want to be seen. And yet, in another persona, you're seen all the time and you won't give it a second thought..... I would not walk*

into an exercise class in a gym in front of strangers, and I couldn't walk into a swimming club and say "I want to join""" **(Female 7, 55 years, G1)**

"…….subconsciously you're being someone else" **(Female 4, 29 years, G1)**

During another initial group, participants were asked "***before you came to the class, were you worried about coming, or what did you expect everyone else to be like, and expect the classes to be like?"***

"I think you're worried at first because you're going into the unknown. You don't know what you're going in to do. You knew it was about exercise, you knew it was about diet. But I think once you've come and you see everybody is there for the same reason you are, it's not as daunting I think, once you're there" **(Female 21, 52 years, G1)**

This dialogue supports the requisite for referring health professionals to provide positive and knowledgeable information encouraging individuals to attend. This information should promote attendance at the ERS (to increase physical activity levels), and provide awareness of the content and participants on the intervention to encourage participation.

In a second group, when asked if they had any comments to add to the focus group discussion, one individual commented on the friendliness of the participants.

"People are very friendly. You feel a bit awkward to start with and then you get used to peoples, faces each week, and you sit next to different ones" **(Female 17, 49 years, G2)**

Seemingly, once individuals have got over the initial awkwardness and worry of attending alone, they feel comfortable in the new environment. Thus if individuals can be encouraged to attend the initial few weeks of the intervention, this factor may be eliminated from non participation.

This lack of confidence in a physically active environment may also be due to the garments worn that are suitable for physical activity; wearing them in front of others was a concern as previously suggested by Taylor & Fox (2005). However, once individuals realised that they were with "similar" people, this was not such an issue.

> *"It's took some confidence to go and put the costume on, but there are some people there a lot bigger than me and made me very welcome when I went. Straightaway, everybody met in the foyer and they all made you welcome and I didn't feel embarrassed at all then. That's something I wouldn't have done on me own. But with that bit of a push and now I love it"* **(Female 19, 50 years,)**

Furthermore, lack of confidence to participate in the activity, due to being overweight, was a barrier; knowing that they are competent to do the exercise was important to the participants.

> *"...but we've (female and daughter) been going to aerobics on a Tuesday, which again, I wouldn't have even dreamt of going to until I came here and did some on the Wednesday. Knowing I could do it, I didn't think I was up to it. I thought it was beyond me, if you like. I thought I couldn't have done it because I was too big to do anything like that and I didn't think I'd keep up with anybody, which proved I was wrong"* **(Female 21, 52 years, G3)**

These two factors ('embarrassed by their bodies when it comes to wearing few clothes' and 'unease in fitness and exercise settings') have been identified previously as a significant outcome of ERS participation (Taylor and Fox, 2005). This is identified herewith when in a final group one participant admitted feelings of being frightened initially. These turned into feelings of brilliance.

INT: "Exercise wise; is there anything else that you've learnt?"

"..... I was frightened that I wouldn't be able to do any exercise because of how I was, but I feel brilliant now, because I can do more than I thought I could" **(Female 7, 55 years, G3)**

Finally, it was positive to see that individuals who persevered with the physical activity seemed pleased with themselves, for having done more exercise than they had expected and developed from being anxious to participate, to being secure in the physically active environment.

"But when you progressed (to the more advanced exercise class), I thought I'm not going to be able to do this." But I thought I made my mind up, I would do, I would carry on until I felt I couldn't do any more, and I surprised myself because I did everything and everybody said "you'll pay for it this week, you'll be stiff." But I haven't had any stiffness at all" **(Female 7, 55 years, G2)**

"Oh yeah, because that was my objective, to get some weight off and get my joints more mobile. The first time I did it, I could only do about 20 minutes and I had to sit down and the exercise instructor said 'well if you've got pain', which I have in my hip joints she said 'don't do it'. The week after, I did about half an hour, and then the third week and onwards I've been doing full class, so I felt better of it" **(Female 8, 64 years, G2)**

These conversations identify problems of lack of self esteem, confidence to exercise and physical restrictions associated with being overweight. However, it also shows how through participation in an ERS, these factors are becoming less apparent. Previous research has indicated that self efficacy (Sallis *et al*, 1992) and confidence (Finch, 1997) to participate in physical activity are important aspects of non participation. The previous section illustrates this; it appears that there is a need for both initial confidence to commence the exercise programme,

as well as enhanced confidence to exercise through increasing necessary skill levels.

It is apparent that overweight individuals are self conscious in public environments to which they are not acquainted. They also find obstacles in certain situations where they feel restricted and frustrated, due to their physical size. The lack confidence to attend and participate in physical activity comes from sensitivity to others' negative thoughts towards their participation and clothing. In addition, the thought of failure to complete the activity is problematic to some individuals. However, once individuals experience a positive friendly exercise environment, they become less daunted.

6.5.2 Previous experiences of physical activity

Previously, prior experiences of physical activity have long been indicated as influential on current and future activity levels (King *et al*, 1988). Consequently, it was deemed important to collect evidence of the subgroups former physical activity encounters.

> ***INT: "If you can tell me how you ended up being referred onto the New Weighs class?"***
>
> *"I've been a keep fit nut in the past and I found I couldn't do it because of my health problems, and I'm putting weight on again and getting depressed, so I thought I'd come"* **(Female 20, 62 years, G1)**

Interestingly, the above participant had been a "keep fit nut" in the past, and after weight gain, recognised that her health problems could be improved through diet and exercise, and she instigated steps to achieve this.

> ***INT: "Did you take part in any regular physical activity; 3 to 4 times per week for half an hour?"***
>
> *"I was a classical dancer in my youth. Consequently, after I had arthritis in my knees, so it's not all that great, I gave it up, I was going 3 times a week.*

But since then, I've done aerobics and swimming... **(Female 20, 62 years, G1)**

INT: Question (WIP) "Are you losing weight for yourself or so that you can feel better when you're out, more confident?"

I come from Plymouth, Devon. It's nothing but swimming and dancing, and since then I've gone up (in weight), plus with children, I've had four children, so my weight's gone up and up to the stage now, where it wants to come way down" **(Female 16, 58 years, G2)**

Ironically, it seems that those who were previously active, gave up activity due to ill health. In addition, family commitments related to traditional gender roles were a reason for becoming less active.

6.5.3 Participant's opinion of referring Health Professionals

Study 1 showed that 21% of those referred into an ERS fail to attend the initial consultation. As discussed in chapter 3, referring health professionals are one of the main factors in that time, and therefore experiences of referral for participants are important to understanding possible reasoning behind those who fail to attend.

Patients were referred through a variety of health professionals and it is interesting to see how participants perceived the advice they get from them. Whilst discussing support and encouragement to exercise, the following conversation arose.

"There's a way of saying to you, you know, perhaps if the doctor sent you to lose weight, then you should try to lose weight, and there's a way of encouraging you to do that, and then there's a way of bullying you and say "you need to lose weight ...." **(Female 7, 55 years, G1)**

"I think if your doctor tells you that you need to lose weight, you'll accept it, but if any of my sons said to me, "you need to lose weight" I would say "what's it got to do with you" **(Female 2, 52 years, G1)**

Thus it is apparent that the GP's suggestion to lose weight is met with less resistance than a family member. Furthermore, it is positive to see that the health professionals are enthusiastic about recommending exercise to patients, regardless of the reported medicolegal implications associated with exercise referral as the following narrative shows.

> *"When I found out I was diabetic ...the doctor told me to try and walk at least a mile a day and do some gentle exercises, which I have tried to do"* **(Female, WIP, unknown age, G1)**

> *"I think our doctors had reports of other ladies who've done this course before and he seems to be very impressed with the way things are going. He's a modern kind of doctor though, and I think would rather refer patients to exercise than just giving them a tablet to lose weight. He likes this idea"* **(Female 17, 60 years, G2)**

> *"They've had an hour with you to discuss it as well, where if you go to your doctors or your nurse, you haven't got that time. Like when I first found out I was a diabetic, they were throwing all sorts at me. Well me, I've got to have it explained to me a few times, before it sinks in. You're just getting bits and bobs all the time, so of course the dieting, they don't call it dieting as such, it's a change of food, so that is – I've sat there and listened and have been able to absorb it better than just having it thrown at me by one person"* **(Female 21, 52 years, G3)**

Lack of time that referring health professionals can give to patients is highlighted, and the difference between the qualities of information, due to the time restrictions, was acknowledged. However, if the knowledge passed on is not correct or presented in a way in which the individual understands, then it leads to confusion.

"I decided to go on this because I was told that it would help me feel like I'd got more energy and help me with my blood pressure and with my blood glucose, but then the doctor at the hospital told me it wouldn't" **(Female 7, 55 years, G1)**

"You're getting told conflicting things all the time" **(Female 7, 55 years, G1)**

This participant seemed to have been given inconsistent information about the health benefits of being physically active. This links back to the importance of education for health professionals as well as participants.

Generally, it appears that overweight patients respect their GP's advice. However, due to time restrictions, they may not be the ideal health professionals to disseminate the information. In addition, some health professionals are giving out incorrect information, which causes confusion.

6.5.4 Outcomes of success during a weight loss intervention

The ultimate aim of the New Weighs intervention is weight loss. However, participants were asked their goals for the 12 week intervention so as to gain a greater understanding of how people thought the intervention could benefit them. They all centred on increases in fitness and weight loss, enabling them to have an improved quality of life.

> ***INT: "And have you got any expectations of the next 12 weeks? Any aspirations, any goals you're wanting to meet, or hopes about what is going to happen to you, or change or not change?"***

"Well I want to lose some weight ...., I'm hoping to get down to about 12 (stone), and some energy, that's what I'm short of. Stop this tiredness, which I get a lot of lately. I'm nowhere near A1 over the last few months……." **(Female 3, 63 years, G1)**

Losing weight is perceived as a precursor to getting more energy and stopping current tiredness. Furthermore, participants wanted to become fitter, more active and develop a new approach to eating.

> ***INT: "And what would you say your expectations are? What are you expecting to get from the next 12 weeks?"***
>
> *"Hopefully to lose weight, and be more active than I am at the moment.....basically I just want to get the weight off, to reduce the pressure (on her chest), so I can breathe a bit more easily"* **(Female 4, 29 years, sleep apnoea, G1)**
>
> *"I'd like to lose some weight and I want to get a (gym) programme together"* **(Female 20, 63 years, G1)**
>
> *"I want to get fitter, obviously"* **(Male 2, unknown age, G1)**
>
> *"Get fitter and really a new way of eating, a new form of eating"* **(Female 21, unknown age, G1)**
>
> *"Diet and exercise... good eating, well balanced, ... eating properly"* **(Female 20, G1)**

By the second group, participants wanted to continue with the exercise to allow them a better lifestyle, including attending social events;

> *"Yeah, because I think when you put on weight and you're not as mobile as you were, you get to the point, well I do, you don't want to go out, I don't want to go to social events where there's lots of people"* **(Female 17, 55 years, G2)**

Dancing;

> *"I want to go back on the dance floor"* **(Female 16, 57 years, G2)**

And wearing clothes

> *"Hopefully, I can take out all those clothes I've got packed away and start wearing them"* **(Female 7, 55 years, G2)**

This change, over the six week period, was positive, as participants were starting to see the wide ranging benefits of becoming more active and losing weight, that would allow them a better quality of life; going to social events and dancing and wearing clothes that they had not been able to for a period of time.

It is positive to discover that participants recognised the importance of combining diet restrictions and exercise enhancements for weight loss.

> ***INT: "Do you think diet or exercise is more important to the weight control or weight loss?"***
>
> *"It's not all about dieting"* **(Female 1, 47 years, G1)**
>
> *"Healthy eating and exercise"* **(Female 2, 52 years, G1)**
>
> *"If we find the right balance, we'll be alright"* **(Female 3, 63 years, G1)**
>
> *"It can't just be exercise; it has got to be both"* **(Female 1, 47 years, G1)**

This was reiterated in a further initial group. However, this group had taken part in 2 sessions of New Weighs, before the focus group occurred, due to problems discussed above.

> ***INT: "So which component of the New Weighs course do you think is going to be more important; diet or exercise?"***
>
> *"Diet and exercise... good eating, well balanced ... eating properly"* **(Female 20, 62 years, G1)**

In a mid point group, this was further confirmed.

> *"Yeah, but you see doing both anyway, I find if I just do one, if I diet and don't exercise or exercise and don't diet, then it doesn't do me any good. I've got to do both. I've got to combine them both"* **(Female 21, 52 years, G2)**

However, it was felt that there was an underlying implication throughout the focus groups, that restricting diet was more important for weight loss than physical activity.

Whilst the ultimate aim of the intervention is to lose weight, participants were confused about the implication of their weight when trying to determine their own success.

> ***INT: "Which component of the New Weighs class is going to be more important?"***

> *"I'm finding it a bit of a problem. I did quite well when I was dieting, well not dieting as such, but I did quite well, I lost 6lb in those 2 weeks. And then I started exercising, and then lo and behold, I suppose the exercise turns the fat into muscle, so I now weigh heavier, probably feeling better, but weighing heavier and lost 2 inches off my waist. So I don't know"* **(Female 20, 62 years, G1)**

> ***INT: "Do you think that your actual weight on the scales is more important than how you feel and your measurements?"***

> *"I'm pleased about that, but I'm not happy when I step on the scales..... today, I'm likely to step on the scales again and that 6lb I originally lost, I'll probably have that back, so that's depressing"* **(Female 20, 62 years, G1)**

> *"But it shouldn't really be depressing, because you feel healthier, don't you?"* **(Female 18, 54 years, G1)**

"I'm feeling better. But you step on the scales and it's a case of "Oh, you've put weight back on" **(Female 20, 62 years, G1)**

"The first week I was on the diet, I put 5lb back and I was eating the same food as him (husband), and he lost 2lb, so it just shows you we're all different" **(Female 18, 54 years, G1)**

"Maybe I shouldn't step on the scales" **(Female 20, 62 years, G1)**

"You shouldn't take notice of what weight is on the scales ..." **(Female 18, 54 years, G1)**

"I'll try it today and see what's happening and then I'm just going to say I'm not doing it, weight doesn't matter at the end of the day" **(Female 20, 62 years, G1)**

INT: "What, you're not going to get on the scales?"

"I don't think so, I'll try it today ... and then, after that I'll see..." **(Female 20, 62 years, G1)**

The emphasis on weight loss alone may be negative when individuals are feeling healthier in themselves. Interestingly, Female 20 had a negative weight loss 18 weeks after commencement of the course.

It is apparent from this conversation that certain individuals consider body weight alone is not the best indicator of success. The emphasis of being physically weighed, rather than increases in fitness or changes in body composition may not be the most important thing for these people, as the following conversations, in a final focus group imply.

INT: "When I spoke to you the first time you came and I was asking you what you were hoping to achieve, you obviously all said you wanted to lose weight, but it was also feeling fitter"

"God yeah, I feel fitter than what I did when I first started" **(Female 4, 29 years, G3)**

"I do" **(Female 3, 63 years, G3)**

"But as for losing all the fat, I'm still struggling with an awful lot" **(Female 4, 29 years, G3)**

"Not this Saturday just gone, the Saturday before, I bought a jacket four sizes smaller, and this morning, I've lifted out five pairs of pants I've not worn for over three years, and I've got in every pair..." **(Female 7, 55 years, G3)**

"It's like having a new wardrobe again" **(Female 3, 63 years, G3)**

"I've got a pair of trousers I've not worn for a while, but I've started to get in, and my clothes have gone slack on my shoulders, but I don't weigh any less, according to the scales" **(Male 1, 61 years, G3)**

"No. We're ignoring the scales here now, because this morning, well our clothes were getting slacker on us, but when we get on the scales, we're no less. But, the way we feel and with our own clothes and what we can do now, there must be something right. And apart from which, our own scales at home are the ones that we're going to be using after today. This morning, after my shower, I was 17 and half, and I've just got on again and I'm just short of 18, so it'll do for me, at the moment. I'm staying positive" **(Female 7, 55 years, G3)**

Although participants were confused by the implications of weight loss, improvements in anthropometric measurements (tricep and sum of skinfolds, waist and hip circumference and body mass index) over time are significantly associated with physical self perceptions (Taylor and Fox, 2005). Moreover, physical self perceptions are significant to exercise motivation (Sonstroem, 1998), therefore, reduction in anthropometric measurements should increase exercise motivation and should therefore be encouraged.

By the third stage, participants' emphasis was on how they were feeling, if they were any fitter and if the clothes they had been wearing were now too large for them.

In another final group, loss of inches was more apparent than loss of weight on the scales and participants were feeling positive about this.

> *"I've seen 2 friends. I see them more or less every week, but since the fire at the school, I've not seen them for the last couple of weeks. I've seen her on Monday, one of them, and she was ill, so I called round to see if she was alright. She said "have you lost weight?" I said "no". She said "well you look it though. When I seen you on Monday, you didn't half look fantastic, you were sort of going in the right place" I thought "are you sure you were looking at the right person"* **(Female 21, 52 years, G3)**

> *"You see, you could have lost quite a few inches..."* **(Female 19, 50 years, G3)**

> *"I said its more inches than pounds if I've lost anything"* **(Female 21, 52 years, G3)**

> *"Well that's just as good isn't it, because I lost some weight and then I lost inches, I put the weight back on but lost the inches, it was weird"* **(Female 20, 62 years, G3)**

INT: "I was speaking to some people the other day and they were talking about how much they weighed on the scales, and now it's got to the end of the 12 weeks and although they've lost weight they haven't lost perhaps as much as they hoped. But in fact one of the ladies has gone down four dress sizes and she feels fantastic, because the emphasis isn't on weight and jumping on the scales every week, it's more how your clothes are feeling and how you're feeling……."

"How you fit in your clothes, yeah" **(Female 20, 62 years, G3)**

"I bought two T-shirts and I always get a size 22-24, being bigger on me anyway, and these absolutely drown me, I must admit. But my excuse is it's the material, bigger material or something, and that's that" **(Female 21, 52 years, G3)**

Female 20, who had lost inches, although she had increased her weight, shows the importance of measuring body composition, rather than weight loss alone, particularly as individuals are exercising, in addition to changing their dietary behaviours.

As well as changes in body shape and loss of weight, participants gained additional benefits, such as ease of walking and this was a positive outcome for numerous members of the group. Furthermore, increases in motivation, energy and knowledge were identified as outcomes of participating in the intervention.

It appears that even after only 6 weeks, participants were feeling the physical benefits of being more active. This is important, to encourage participants to continue with the new behaviour.

"I'm able to walk better for longer" **(Female 17, 49 years, G2)**

"I've found that I used to go for a walk, which I found really difficult. Now I think I'll just push myself a little bit more and a little bit more and it's getting easier" **(Female, WIP years, G2)**

The motivation to continue exercising is also apparent.

> *"I swim twice a week and I've been coming to this class, so that's three days a week, which I never would do before"* **(Female 9, unknown age, G2)**

By the third group with participants, there were clearly internal and external motivators to continue exercising. One lady pointed out that her husband had noticed her improvements in fitness.

> *"But the fact that I can walk upstairs and I'm not out of breath, and I can walk outside without getting out of breath. In fact, the other week my husband pointed out. He said "you've walked the full length of Leigh, you've kept up with me and you've been talking as well, which is something I haven't been able to do for a long, long time"* **(Female 7, 55 years, G3)**

> *"...weight loss, I'm walking better"* **(Female 19, 50 years, G3)**

> *"I feel better in myself than I did three months ago"* **(Female 2, 52 years, G3)**

> *"Usually more good days than bad days. I have more good days now, rather than bad days"* **(Female 4, 29 years, G3)**

Intrinsic motivators, as highlighted previously as important in developing an exercise identity (Hardcastle and Taylor, 2005) also seemed to be appearing, because they knew they would feel the benefits post-exercise.

> *"Like everybody else, I thought, oh, I can't be mithered doing it, but I'll get up and do it now where I didn't before. So I feel better in myself once I've done it, I feel as though I've achieved something in myself, so I feel better"* **(Female 21, 52 years, G3)**

During a second group, participants were asked about their experiences of participating in such a group. The conversation is shown below.

INT: "What do you look forward to?"

"It's good to see if you've lost weight and everybody else has too" **(Female 9, unknown age, G2)**

"Yeah, to see your friends" **(Female 8, 64 years, G2)**

"It's good with the dietician explaining different things, because that's an education in itself, isn't it?" **(Female 9, unknown age, G2)**

INT: "And how do you feel when you've finished?"

"Shattered……" **(Female 9, unknown age, G2)**

"But it's a satisfying tiredness" **(Female 7, 55 years, G2)**

"Yeah, it is, you feel like you've done something, don't you" **(Female 9, unknown age, G2)**

"Yeah, and you feel as though you've achieved something" **(Female 7, 55 years, G2)**

"And it's something for yourself, you're not doing it for family or anybody else. It's something you've done..." **(Female 9, unknown age, G2)**

"And when you go home, you say to yourself ""I'm not eating nothing fattening today, after all I've been through today. I'm going to have something – beans on toast or something that's not fattening"" **(Female 8, 64 years, G2)**

INT: "So do you think the fact that you're coming here exercising has been having an additional effect on what you're eating?"

"I think it's just changing your outlook, isn't it? You've been here and you've talked about something else and it sticks in your mind" **(Female 9, unknown age, G2)**

"And the exercising does make you feel, body. Well it does me anyway because I've got arthritis everywhere; it helps with that a great deal" **(Female 8, 64 years, G2)**

Other benefits to being physically active came out during this dialogue whereby participants found they had more energy and motivation to do other daily activities.

In addition to goals and measures of success during a weight loss intervention, it was interesting to discover who participants held responsible for achieving these goals. It has been shown that accountability for their involvement in physical activity is a strong indicator of participation to exercise, when personal commitment and motivation are lacking (Nies *et al.*, 1998). Within the groups, there was acceptance that ultimately maintaining a healthy weight and becoming physically active was the responsibility of themselves.

Participants recognised that they had to work hard to achieve their goals.

"I've lost seven (lbs in weight), so I was quite pleased, I would have liked a bit more, but obviously I'll have to put a bit more effort in" **(Female 16, 58 years, G2)**

INT: "So have people started noticing (your weight loss) who don't really know you're coming here?"

"I don't know, this time I'm doing it for myself. I've got my head screwed on the right way this time" **(Female 9, unknown age, G2)**

However, a few participants indicated that they would like the responsibility of losing weight to be with a significant other.

> *"What I'd like is a long list or a booklet telling you what you can eat, what's the best thing for you to have and if they're all written down, and then I can say "I can have cheese today"* **(Female 8, 64 years, G2)**

> *"As I say, we won't know what we can eat unless someone does a list for us; I know it's another chore though for anybody to do, isn't it?"* **(Female 8, 64 years, G2)**

> *"I want to know how to plan meals, what we can have for each meal"* **(Female 1, unknown age, G1)**

To conclude, ultimate success of the New Weighs intervention is weight loss and weight loss and increases in fitness were the main aims of the participants. There was a suggestion that combining dietary restrictions and increasing physical activity would aid weight loss, although there was an underlying theme throughout the focus groups that dietary restrictions were more prolific. Participants on the intervention were confused by the implication of total weight loss, when their measured weight was not altering, although bodily appearance was improving. Furthermore, more holistic outcomes provide participants with feelings of satisfaction, achievement and motivation. Participants mostly considered that achievement of these goals was dependent on their own actions. However, some commented that greater support would be beneficial.

6.5.5 The experience of being weighed in a weight loss intervention.

In addition to weighing not being the ultimate outcome measure, it appears that there are mixed opinions on being weighed in front of others.

When participants were losing weight, they appreciated the support from other members of the group

INT: "What type of things could we do to encourage you more, to support you?"

"Well, when somebody gets weighed and they've lost some weight, you clap, don't you. It's well done" **(Female 9, unknown age, G2)**

"Yeah, good for you" **(Female 7, 55 years, G2)**

"You're doing great" **(Female 9, unknown age, G2)**

And in a final group:

"And if you only lose half a pound, everybody praises you and it makes you feel good, doesn't it?" **(Female 3, 65 years, G3)**

"Yeah we're all in the same boat..." **(Unknown, G3)**

"It gives you more incentive" **(Female 4, G3)**

"Yeah" **(Unknown, G3)**

"I always think you need that. It's like if you go to a slimming club, it's that little bit of support you've got with them" **(Female 8, G3)**

However, others really do not like the experience of being weighed and sharing their measured weight with other members of the group.

"I don't like getting weighed in front of everyone. I feel so ashamed ...what I like about it is you get weighed and nobody knows what you've lost or gained and there's no clapping.....I've been to Weight Watchers. I hate all that when you're all that, all that clapping. You feel like a seal.....that's between me and the dietician. It's nothing to do with anybody else" **(Female 24, G2)**

Overall, it is apparent that there is discrepancy between individuals regarding behaviours during the weekly classes; whereas some participants like sharing their weight loss, others do not.

6.5.6 Benefits of same referral reason- peer support

The use of same disease status groups for changing health behaviours has been utilised for this intervention. The principle is to promote physical activity in conjunction with dietary behaviours, specifically for individuals who will benefit from weight loss. The benefits of this for the participants have not been identified previously and, for this reason, were brought up for discussion throughout the focus groups.

A discussion during an initial focus group was on the other participants' impact during the intervention.

> *"I think what would be good about this is the fact that we're all together and we're getting to know each other. I like it and we'll support each other and that's important. You can't do it on your own"* **(Female 2, 52 years, G1)**

In a conversation relating to confidence and self esteem, the same participant said:

> *"And shared experiences as well. We'll all be telling each other things about ourselves and you never know what you learn from people that can help you"* **(Female 2, 52 years, G1)**

Although the following discussion took place within a group of participants who are 2 weeks into the scheme, it appears that they have already experienced group cohesion and encouragement.

> ***INT: "What effect do you think people are going to have on you during these 12 weeks...?"***
>
> *"Obviously, you'll be talking amongst yourselves and you'll find out stories of what they do and how they cope and what exercise they do. Just talking between yourselves gives you ideas ..."* **(Female 18, 54 years, G1)**
>
> *"It's encouraging, isn't it?"* **(Female 20, 62 years, G1)**

"And we have a good chat, don't we?" **(Female 21, 52 years, G1)**

"We have a good chat and we had a lady on my side, and we help her and we always jolly each other along ...I was devastated, I'd put 2lb back on" **(Female 20, 62 years, G1)**

"But we boosted her up.....When one's down, the others cheer them up and vice versa, isn't it?" **(Female 21, 52 years, G1)**

"Yeah, I mean they'll (health professionals) give you the knowledgeable advice and help and we'll (participants) just give you the encouragement to keep going" **(Female 18, 54 years, G1)**

"Because we're (participants) doing it, we're the ones that are doing, aren't we? They've (health professionals) probably done it and they're just putting their knowledge that they've done it. But we're actually going through it, so we're helping each other do it" **(Female 21, 52 years, G1)**

Thus participants were already thinking about how other members of the group were going to affect their success within the intervention, and were displaying encouragement for those who had not reached their individual goals. The differences between peers and health professionals was also highlighted as peers were experiencing the same occurrences and would therefore be able to help one another.

By the 6 week stage, participants had experienced this and acknowledged the importance of peers within the groups for companionship and motivation.

"I think personally that the support here is more important, because we're all doing it together. Then from the family support, because that keeps you going until we get together next week" **(Female 9, unknown age, G2)**

"It's the company I think, the motivation" **(Female 7, 55 years, G2)**

Later on, in a third group, a participant commented that the intervention was beneficial as a social event, and that meeting friendly people was advantageous.

> *"Another thing is the friendliness of the people. Meeting people has helped me because, before I came here, other than taking the dog for a walk, twice a day, with my next door neighbour, some days I wouldn't see anybody until my husband came home, and I might not speak to anyone until he came home. So going to something like that has got me knowing more people, and when you're out drop in on them and you feel better. You feel better for meeting other people as well"* **(Female 19, 50 years, G3)**

The additional psychological benefits of physical activity are displayed in the above quotation, whereby individuals feel better for coming into a social environment.

Although the participants' similarities seem to be the reason for their ability to provide support and encouragement for one another, one participant suggested that their differences in age and backgrounds were beneficial, as it meant they were less competitive. This opposes the notion of social physique anxiety due to individuals accepting dissimilar individuals in the exercise environment. However, this comment was made mid-intervention; therefore individuals' social physique anxiety may have reduced by that time point.

> *"We're such a mixed age group as well. If you go to a fitness club, you expect it to be all like keep fitness sort of things and they're waif-like to start with. So you're a bit on the big side for that. If I go for two weeks, I'd feel very self conscious, whereas here, we're all different backgrounds, we're all different ages, all got different targets, there's not that competitiveness just a friendly atmosphere and you're all aiming to lose a bit of weight and get a bit fitter"* **(Female 17, 49 years, G2)**

However, competitiveness was an attractive feature for one particular participant, as it was a challenge to improve if a peer was achieving weight loss.

> *"It's like everything else. Even when you go to a slimming club, if you go with a friend, you say "she's losing more than me. I've got to try harder next week." I wish that you could come more days and do things more days, because I think once a week is not enough for me"* **(Female 8, 64 years, G2)**

At the six week stage, participants were asked about confidence to exercise as a result of having taken part. It is apparent that similarities between participants in the group lead to greater confidence to exercise, as they are here for the same reason. It is also represents an emergent exercise identity. The conversation is as follows;

> ***INT: "Would you say you feel more confident in yourselves now for doing the exercise, within the exercise environment? I know when I first spoke to you, some of you were saying you wouldn't dream of coming to a place like this……"***
>
> *"One of the things I like is we're all big, there's no skinny ones here, we're all big"* **(Female 8, 64 years, G2)**

> *"That's the camaraderie between us isn't it, and it's drawn us together and we're all encouraging one another……"* **(Female 7, 55 years, G2)**

> *"...I went to Total Fitness, or whatever it is, and you see all these lovely figures, who we hate, with all the brand names on and all that. We wouldn't fit into there"* **(Female 9, unknown age, G2)**

> *"When I go downstairs (to more advanced exercise class) now, I still want to stay at the back"* **(Female 7, 55 years, G2)**

> *"I don't mind now because I've got over that, because we're all here for the same reason"* **(Female 9, unknown age, G2)**

Subsequently, at the 12 week stage, group cohesion was emphasised by the participants, as can be seen in the following dialogue.

INT: "I know you were saying before that you weren't sure and it was difficult at first (the exercise), but now you can do it, it makes it a lot easier"

"It's enjoyable now. And the fact that you're coming and doing it with people who you know..." **(Female 1, 47 years, G3)**

"You're all in the same boat, aren't you? And you're all aiming for one thing" **(Female 7, 55 years, G3)**

"Yeah, you're not coming to a class of exercises with a load of people who are stick insects" **(Female 1, 47 years, G3)**

"No ..." **(Female 7, 55 years, G3)**

"We're all aiming for the same thing, aren't we?" **(Female 3, 63 years, G3)**

"I think that's motivating ..." **(Female 1, 47 years, G3)**

Having similar goals seemed to be of importance to participants, and it was highlighted at the 6 and 12 week stage of the intervention.

Furthermore, the importance of having individuals who had, or were, experiencing similar encounters was reiterated when one participant suggested the use of people of a similar age, who had experienced weight loss as a valuable role model.

"I'll tell you what I'd like to see, and I've said this many a time. I'd like to see it on the television and in the papers. I'd like to see a good looking 60+ man or woman that's done it, and stand up and say "I've done it. This it what I did." I'd like to see that .....well anybody that's done it could give their experiences and how they've done it. It might not suit everybody how

they've approached it, the pitfalls, the highs and lows" **(Female 20, 62 years, G3)**

It seemed to be very important for the individuals that they had some form of similarity and their reasons for participating in the intervention were alike. This is most likely associated with physical self perceptions whereby participants can identify a similarity between themselves and others and therefore their physical self perceptions increase (Fox, 2000). Their ultimate goals were the same, to get fit and lose weight. In addition, the fact that they were all overweight was the main foundation of their relationship. Thus, same disease group interventions seem to be favourable to these overweight individuals.

6.5.7 Determination to continue with learned health behaviours

In initial groups, participants set out goals and objectives for the 12 week intervention. However, insights into factors that maintain attendance and exercise over the 12 weeks are of interest. At 6 weeks, participants were asked how they were progressing through the intervention.

"It gives you the initiative to try, coming here, knowing you're going to come, you know, I say, I'm going to try harder" **(Female 8, 64 years, G2)**

INT: "And that must be a motivating thing now, when you're seeing – even though you haven't perhaps lost it on the scales as much as you wanted to ....."

"I think, myself, it's coming to a place like this which will really get you going after the 12 weeks" **(Female 16, 57 years, G2)**

It appears that the fact they are attending an intervention is the driving force behind their attendance. One participant saw the exercise programme as the "push" she needed to start exercising.

"...but you needed that little push, if you like, and these 12 weeks have been that little starter for carrying it on further" **(Female 19, 50 years, G3)**

In addition, it is positive to see that there is motivation to continue after the intervention is finished.

"Well, I've made my mind up that when this 12 weeks has finished, I will carry on" **(Female 7, 55 years, G2)**

Previous research has looked at intention to exercise as part of a group and alone (King *et al*, 1991). Within this sample, motivation levels to exercise alone and at home seem low.

INT: "So what type of encouragement and support do you think would keep you coming?"

"I have an exercise bike, and you have all these good intentions, but it never gets any further than that. You just need that nudge……." **(Female 17, 49 years, G2)**

INT: "What's the difference between exercising at home and then making the effort to come here?"

"Well, everyone buys a video, and if you buy one in a charity shop with all good intentions, they might even review it a couple of times and see what's on the thing. But quite often it's getting further than viewing" **(Female 17, 49 years, G2)**

INT: "What do you think is the difference, because really you have to make more effort to leave home and come here, and spend two hours here, than you would in your lounge doing your exercise video for half an hour?"

"It's the thought of losing the weight. You're coming because somebody's interested and you're losing it, and doing the exercises each day. We've only

got the mobility exercises and things like that, but it gives you something to do, and if it's trying to help you lose the weight as well, then I think it's good. And then coming here ..... At least you're doing something. If you had to do it at home, you wouldn't do it" **(Female 16, 57 years, G2)**

"A friend of mine, she's got all these different keep fit things and I said to her, "Have you tried all your different weights and whatever?". Well, I've never had the opportunity, or I've never been in the house on my own. Well you're never going to do that are you, because there's always going to be somebody there, so you've got to make time for yourself and this is the only way really to make time for yourself. Make the effort and get here and do it. Everybody else is doing it, you're all in the same boat" **(Female 17, 49 years, G2)**

It seems that, although participants may have good intentions to be physically active outside the intervention, and invest in videos and equipment to enable them to do so, they seem unable to find a suitable time to use them. The fact that *somebody is interested* in their health and other participants have similar goals is appealing.

The following conversation occurred during a final discussion group in response to the following question;

INT: "Anybody else found it easier to do other things, like every day things?"

"Yeah, I've just felt more motivated" **(Female 1, 47 years, G3)**

"Yeah, yeah ..."

"Yeah, you do. You find you have that energy don't you now.....you want to get on with it now, don't you?" **(Female 7, 55 years, G3)**

"Before you didn't" **(Female 3, 63 years, G3)**

"But before, I didn't used to think I'd have time to come and do ... I've not got time to come to a slimming class, but you have, you fit it in" **(Female 1, 47 years, G3)**

"It's easy to make excuses" **(Female 3, 63 years, G3)**

"Yeah, and now I do" **(Female 1, 47 years, G3)**

"I still do everything that I did before and come here" **(Female 1, 47 years, G3)**

"Yeah" **(unknown)**

Thus at the final time point, previous barriers to exercise, such as time and lack of motivation, were fading and the participants identified that they used to use these justifications for being sedentary.

Participants felt the intervention was the "push" they needed to become physically active, and certain participants were enthusiastic about continuing the health behaviours after the 12 weeks. Partaking in physical activity outside of the intervention was not popular, as participants felt they did not find suitable time. The fact that someone was showing an interest in their health and they were with other people in the same boat was positive to attendance. Finally, previous barriers for becoming physically active, such as time and fatigue, were reduced, as a result of partaking in the intervention.

6.5.8 Behaviour knowledge

One of the important factors within health promotion is increasing the individuals' knowledge of the behaviour, allowing them to make their own educated decisions. It is proposed that, if people know what constitutes a healthy behaviour, they are able to make the right decision to undertake healthy lifestyles. This is the rationale for the educational component within the "New weighs" course and

supports the NQAF (2001) which highlights that ERS should educate participants to the benefits of physical activity participation.

> ***INT: "What new things have you learned so far? Is there anything that's been a real surprise to you?"***
>
> *"Walking is good for you, isn't it? We should walk more, try and do it regularly ...walk ... rather than getting the car out to go to the post office, I'll walk"* **(Female 20, 62 years, G1)**

In later groups, there was an appreciation of the knowledge. Individuals recognised that their current behaviours were not conducive to health.

> *"But, at the end of the day, it's alright laughing and all that, but it's not doing them any good being that size"* **(Female 9, unknown age, G2)**

They also recognised the need for increases in knowledge regarding diet and exercise behaviours.

> *"Support telling you what you should do, because you don't know. When you come sometimes, you don't know anything about slimming, do you, or dieting?"* **(Female 8, 64 years, G2)**
>
> *"Everything's got to be had in moderation really"* **(Female 9, unknown age, G2)**
>
> *"We know it's very helpful. Walking is the best exercise you can have, but I can't walk very far"* **(Female 8, 64 years, G2)**

It was positive to hear an individual state that she had increased her knowledge more over the duration of the course, than she had previously.

> *"I've been dieting for years. God knows I've lost the count of the years I've been dieting on and off, and that is what I've been doing, I've been yo-yoing.*

Where these last three months, alright, like I say, I might not have lost as much weight as I've wanted to lose, but I'm getting more exercise, and to me it's got to be both. It's got to be exercise and dieting, not just one or the other, because that's what I've been doing, just one or the other"……I've learned things, better things here in the last three months than I've learned for the last 10 years, I'd say" **(Female 21, 52 years, G3)**

Increases in knowledge of healthy behaviours are gained during a weight loss intervention, a combination of diet and exercise in moderation.

6.5.9 Family support

Family support through participation has been identified as not significant ($p>0.05$) in the completion of an ERS. However, family support was considered within the discussion groups.

Negative family support is evident within the sample group. One lady experienced negative support from her children with whom she lived.

"My son and daughter are my critics; especially you know what daughters are like. They're quick to say, and my son sometimes, when I'm going out, he'll say "Right not that Mum", and I say "does my bum look big in this". "Well yes". So I think they've been critical of me ……" **(Female 20, unknown age, G3)**

Family support was displayed through instances where females were attending to support husbands who had been referred onto the ERS.

"I came just to support him (husband), but it won't do me any harm to lose a bit of weight either, because I am overweight ..." **(Female 23, 64 years, G1)**

However, the gender role seemed to cause difficulties for females who, whilst changing their behaviours, had to prepare additional meals for other members of

the family. This traditional female role has previously been highlighted by Henderson *et al.* (2001).

> *"Well, I've tried to change some of his eating habits to fall in with mine, but more often than not I cook two different meals.....Well, he doesn't like salads and he doesn't like Irish men potatoes, which he calls jacket potatoes, but I'll do him the grilled chicken, and I'll do him the grilled fish. He'll have that, but he doesn't want the salad and jacket potatoes..... I do more often than not cook two different types of meal"* **(Female 19, 50 years, G3)**

> *"I do cook them meals that I eat, but yeah, I'm like you, I do have to cook three different lots, but I don't mind doing that. If I've got the time, I'll do it anyway, so yeah, I'm happy at doing that"* **(Female 21, 52years, G3)**

Having to prepare and cook 2 meals instead of one is not supportive, particularly if the second meal is not healthy and does not fit in with the newly learned behaviour.

6.6 Follow up questionnaires for new weighs

Six week post-course, questionnaires (appendix 7) were sent to all those participants, who were asked to initially take part in the focus groups (N=29). Completion to the weight management course was greater (58%) than completion on the overall ERS (42%).

Since the course began in January 2004, 76% of those who completed the questionnaire said they had lost weight. Median weight loss was 8.0lb. This ranged from negative (<0lb) weight loss to 35lb.

6.7 Summary of Findings

Benefits of same disease group

- It seemed to be very important for the individuals that they had some form of similarity and their reasons for participating in the intervention were alike.
- The fact that the participants were all overweight was the main basis of their relationship.
- The fact that someone was showing an interest in their health and they were with other people "in the same boat" was positive to attendance.
- Participants' ultimate goals were the same, namely to get fit and lose weight.

Opinion of referring health professional

- Overweight patients respect their GP's advice. However, due to time restrictions, they may not be the most ideal health professionals to disseminate the information.
- Confusion is caused by conflicting information, which was given by some health professionals.

Experiences of being weighed

- Ultimate success of the New Weighs intervention is weight loss. Weight loss and increases in fitness were the main aims of the participants.
- Participants mostly considered that achievement of their goals was dependent on their own actions. However, some commented that greater support would be beneficial.
- Participants thought that combining dietary restrictions and increasing physical activity would aid weight loss, although there was an underlying theme throughout the focus groups that dietary restrictions were more important.
- Participants on the intervention were confused by the implication of total weight loss, when their measured weight was not altering, yet bodily appearance was improving.

- More holistic outcomes of the intervention provided participants with feelings of satisfaction, achievement and motivation.

Previous experience of physical activity participation

- The lack of confidence to attend and participate in physical activity comes from sensitivity to others' negative thoughts towards their participation and clothing.
- Thought of potential failure to complete the activity is problematic to some individuals.
- When individuals experience a positive, friendly exercise environment, they become less daunted
- Participants who were previously active gave up activity, due to ill health or family commitments related to traditional gender roles.

Experiences of being overweight

- Overweight individuals are self conscious in public environments to which they are not acquainted.
- Public places bring about feelings of restriction and frustration, due to their physical size.
- Participants felt the intervention was the 'push' they needed to become physically active and certain participants were enthusiastic about continuing the health behaviours after the 12 weeks.
- Partaking in physical activity outside of the intervention was not popular as participants felt they did not find suitable time.
- Previous barriers for becoming physically active, such as time and fatigue, were reduced, as a result of partaking in the intervention.

Follow up questionnaire

- Completion rates of the intervention were 58%. This figure was greater than the completion of the entire exercise referral scheme.
- Weight loss occurred in 72% of respondents and median weight loss was 8.0lb.

6.8 Discussion

The aim of this study was to gain a greater understanding of the experiences overweight and obese participants have whilst participating in an ERS. This also involved investigation of the influence significant others have upon their experience of participation and their individual goals for participation. Finally, it was an aim to determine factors of importance to overweight populations, for the maintenance of a physically active lifestyle.

The factors discussed overlap with previous reserach findings and discussions (Crone-Grant and Smith, 1999 and 2001, Stathi et al., 2003, Crone-Grant et al., 2005, Hardcastle and Taylor, 2005 and Taylor and Fox, 2005) which highlight the important contribution of psychological factors in the experiences of those participating in an ERS. This study provides further understanding of the psychological determinants of participation in physical activity through an ERS and the importance of same disease group participation for obese participants.

It is apparent from the discussions, that overweight individuals have social physique anxiety due to them being self conscious in public environments to which they are not acquainted. The lack of confidence to attend and participate in physical activity comes from sensitivity to others, negative thoughts towards their participation and clothing, and thought of potential failure to complete the activity; symptomatic of a low exercise identity (Hardcastle and Taylor, 2005). However, when individuals experience a positive, friendly exercise environment, they become less daunted as their physical self-perceptions improve. It is therefore important that ERS ensure that participants first impressions make them feel secure. In addition, it is important that overweight individuals are informed that they will be participating with others of similar health statuses; after all, participants commented that being with people "in the same boat" was positive to attendance. This may promote attendance at the ERS for overweight participants, by improving their physical self-perceptions (Fox, 1990), reducing their social physique anxiety (Hart et al., 1989) and increasing their exercise identity (Hardcastle and Taylor, 2005). Furthermore, this has implications for other

weight loss interventions (HAD, 2003) which should focus on positively improving the above psychological factors.

Furthermore, it was evident that public places bring about feelings of restriction and frustration for overweight participants, due to their physical size. Thus ensuring that the environment, in which they will be entering, is able to meet their physiological demands may encourage participation. An example of this could be ensuring concealed changing facilities, to avoid overweight individuals having to get changed in front of others.

This study also involved investigation of the influence significant others have upon overweight individuals' experience of participation in an ERS. It appeared within the qualitative analysis that support from peers within the intervention, thus the same disease group, was more important than family members, who sometimes criticised them. Discussion on pages 152 and 153 displays this and is of particular importance because it suggests that friends and family, who have not experienced a disease, can discourage behaviour change.

The greater support from peers within the intervention suggests that the ERS is working as a support group. Cohen *et al* (2000) described that support groups '*capitalise on the similarity among participants' stressful experiences to foster the process of mutual aid*' (p. 222). Due to this shared situation (overweight participants on an ERS), Cohen *et al.*, (2001, p. 225) suggested that it can encourage discussion and normalisation of feelings and emotions. It appears to be true within this sample population, where participants enjoyed being able to share experiences of their disease with other 'like' people. Moreover, the importance to this study is that it has been recognised that the more a group has in common, the more "*active and constant the intercourse among its members*" (Durkhiem, 1952, p.202). Thus if individuals on an ERS have similarities, it may be hypothesised that they will be more likely to attend and complete the ERS. Therefore, recommendations are in line with the NQAF (2001) that supportive mechanisms within an ERS are imperative and need to be enhanced.

Williams *et al* (2004) defined social support as 'being there', 'caring', 'sharing information', 'believing in', 'respecting'. In addition, notions such as 'providing reassurance', 'encouragement' and 'companionship' were all highlighted. This study also corresponds with previous definitions of Social Support, quoted on page 29, as participants are '*exchanges resources to enhance the well-being of the recipient*' (Shumaker & Brownell, 1984, p13) and building '*social relationships'* (Cohen *et al*., 2000, p.4). Throughout the focus groups, these concepts were all identified as important to the participants, as the following comments show.

Providing reassurance *'When one's down, the others cheer them up, and vice versa, isn't it?'* **Female 21, 52 years, overweight, G1**

Straightaway, everybody met in the foyer and they all made you welcome and I didn't feel embarrassed at all then. That's something I wouldn't have done on me own. But with that bit of a push and now I love it" **Female 19, 50 years, overweight**

Encouragement *"Yeah, I mean they'll (health professionals) give you the knowledgeable advice and help and we'll (participants) just give you the encouragement to keep going"* **Female 18, 54 years, overweight, G1**

"...but you needed that little push if you like, and these 12 weeks have been that little starter for carrying it on further" **Female 19, 50 years, overweight**

"Support telling you what you should do, because you don't know when you come sometimes, you don't know anything about slimming, do you, or dieting?" **Female 8, 64 years, overweight, G2**

Sharing information "And shared experiences as well. We'll all be telling each other things about ourselves, and you never know what you learn from people that can help you" *Female 2, 52 years, overweight*

"Obviously you'll be talking amongst yourselves and you'll find out stories of what they do and how they cope and what exercise they do. Just talking between yourselves gives you ideas ..." **Female 18, 54 years, overweight**

"I've learned things, better things here in the last three months than I've learned for the last 10 years I'd say" **Female 21, 52 years, overweight, G3**

Companionship *"It's the company I think, the motivation"* **Female 7, 55 years, overweight, G2**

"We're all aiming for the same thing aren't we?" **Female 3, 63 years, overweight**

With this supportive theme running through the focus groups, the promotion of 'same disease group' ERS classes is encouraged to almost function as a support group. This would also benefit as same disease statuses should require similar exercise prescription, due to comparable physiological and psychological barriers. Thus participants would be receiving exercise of the correct frequency, intensity and type.

Moreover, due to participants highlighting the importance of social support (pages 142-147), it is proposed that ERS's provide individualised assessment of a participant's supportive network on commencement of the scheme. On the basis of this assessment, it is anticipated that additional support is provided to individuals who require more. An example of this additional support could be 'buddying' systems for those who receive less support externally. The notion is to provide an individual similar to the one requiring support, who will attend and encourage the individual, in this instance, to participate in physical activity. It has been shown to be beneficial previously in children (Mattheew & Kesner, 2003; Hancock, 2004), the workplace (Seigel & Reinstein, 2001) and disabling illnesses such as cancer (Weis, 2003) and Parkinson's Disease (Charlton & Barrow, 2002), and is utilised in LEAP projects in the ERS borough (DOH, 2004). In addition, greater contact from referring health and exercise professionals' pre-, during and post- intervention, as recommended by the NQAF (2001) give opportunities to increase support. This may have the additional benefit of improving the feedback and contact between these agencies, as discussed on page 73, and therefore further improve the ERS intervention.

Participants' similarities also lie in their goals of participating in the scheme; to lose weight and increase fitness (pages 129 to 131). Support from within the group to achieve these goals is displayed on pages 140 to 141, and highlights the ways in which this similarity provides suitable support. The provision of support that is appropriate to the individual is important. For example, it is apparent that participants respected their GP's advice. However, some felt they did not have the time to spend with them, explaining their health like other health professionals could (pages 128-129). In addition, participants felt that sometimes this advice was confusing, due to conflicting advice. Thus, although participants respected

advice from health professionals, it was not always supporting them to be physically active. The existing NQAF (2001) recommends that referring health professionals should be competent to provide advice on physical activity participation and provide behaviour change methods to patients and this study suggests that this is not occurring. This initial contact with health professionals, to discuss treatment options with patients, is imperative to the future success of ERS's to support physical activity participation, as discussed on pages 72 to 73. More specifically, general practice is often seen as an important first point of contact in the management of lifestyle diseases, such as obesity, because they are often the first port-of-call for individuals in search of support (NAO, 2001). It is estimated that over half a million GP consultations in 1998 were related to obesity (NAO, 2001). However, it is apparent that GP's are not always educated in the treatment options for these individuals. For example, a survey for General Practioners (N=428) and Practice Nurses (N=627) revealed that GP's are more likely to refer a patient to a state registered dietician than a trained exercise professional or a community-based programme. This said, over 60% of practice nurses and 55% of GP's said they would like improved access for referral to exercise regimes, and over 35% of GP's said this would assist them in referring patients. Conversely, only just over 30% of GP's stated that they would like better training for the management of overweight/obese patients (NAO, 2001). Thus, although there are a huge proportion of a GP's consultations taken up with overweight and obese patients, a large percentage of GP's are not educated or interested in promoting lifestyle interventions as a method of treatment.

Furthermore, Kreuter *et al* (1997) reported that physicians are more likely to provide physical activity advice to patients who are already ill. However, it would unquestionably be more effective to prevent individuals from becoming overweight than attempting to achieve weight loss with an already overweight individual. Therefore, health professionals should be encouraged to provide preventative information for patients to maintain a 'health weight'. With the recent increase seen in childhood obesity (BMA, 2005), it is imperative that this education starts at an early age.

Goals for participation in the ERS were increases in fitness and decreases in weight, as stated previously. Median weight loss since the intervention had begun was 8.0lb and 72% of participants who responded to the post- intervention questionnaire had lost some weight. During initial focus groups, there was an overall emphasis that success on the intervention would be determined by amount of weight lost. In addition, the main means to achieving this was a combination of dietary restrictions and physical activity, although it was sensed that there was a greater importance placed on dietary restrictions than increases in physical activity. During a tracking focus group, it was felt that the emphasis on enhanced physical activity for weight loss increased somewhat, although this was still secondary to dietary restrictions. Education of individuals for increasing physical activity, in conjunction to dietary restrictions, would be effective for tackling obesity, allowing dual actioning of both diet and physical activity. Furthermore, due to weight management being a long term goal, interventions to help achieve this should be long term; as discussed previously on page 103, chronic health behaviours cannot be solved with short term interventions.

However, the negatives of having weight loss and fitness as main goals of participation in an ERS are shown in conversation on pages 132 and 133, when confusion and despondency can be caused if weight loss is not achieved. In addition, no marker of fitness is assessed pre- and post- intervention. Moreover, due to confusion when negative weight loss was partnered by improvements in body appearance, alternative methods of anthropometric measurement, such as body composition or waist and hip ratio (ACSM, 2000), would provide more meaningful outcomes of success for obese individuals. Physical activity participation, used as a goal as opposed to weight loss, may empower overweight individuals to take control of their disease status.

In support of the NQAF (2001) it is proposed that markers of success for these interventions should rely on more than quantifiable measures. Within this study, qualitative methods have indicated that participants gain confidence, motivation, and satisfaction, and learned to enjoy and understand the benefits of physical activity, which should therefore be deemed a positive outcome of an ERS. This is particularly so, as previous barriers to physical activity include motivation, lack of

enjoyment (Allied Dunbar National Fitness Survey, 1992) and confidence (Finch, 1997). If an ERS has the potential to remove some of the barriers previously associated with being physically active, then ERS's should be perceived as having a beneficial impact on physical activity promotion in primary care.

6.9 Summary

This study has investigated a subgroup of participants on an ERS who are less likely to attend and complete an ERS. A greater understanding of factors which influence a participant's success on an ERS is imperative to the future of ERS's. Themes of importance for these individuals for participating in an ERS include lack of confidence, due to others perception of them, and thought of failure. Ill health and family commitments preceded sedentary behaviour for those who were previously active. GP's advice was respected, although this can sometimes cause confusion. Weight loss was the ultimate goal of the participants, although the emphasis of this altered as they progressed through the ERS. Similarity of participants was important to the continuation of a physically active lifestyle to overweight participants.

Study 1

- Referrals are more likely to be female and referred for diabetes or a heart attack. Overweight, obese and asthmatics are underrepresented in ERS compared to the borough population.
- Gender, age, reason for referral and month of referral are significant to attendance to an ERS. Females and those between 46-60 years referred for CHD or a musculoskeletal condition are more likely to attend.
- Referral rates in June were negatively associated with attendance and were greater than for any other month.

Study 2

- 42% completion rates of 12 week ERS.
- Age range and perceived level of physical activity pre intervention were significant to completion.
- Gender, referral category, friend and family support were not significant to completion of an ERS.

Study 3

- Physical activity levels are significantly greater post intervention than at baseline
- No significance increases in physical activity levels at 12 months
- Physical activity levels are not meeting national recommendations
- No significant differences were found in friend and family participation support and physical activity levels over 12-months

Study 4

- Experiences of being overweight
- Previous experience of physical activity
- Opinion of referring health professional
- Outcomes of success during a weight loss intervention
- Experience of being weighed
- Benefits of same disease group
- Determination to continue learned behaviours
- Behaviour knowledge
- Family support

Chapter 7-Discussion

General Discussion and Review of Studies

7.1 Introduction

This study has evaluated an ERS from the point of initial referral (from a health professional) to physical activity levels post- scheme, (12 months on). Study 1 looked specifically at the process from the health professionals' referral to the initial consultation with the exercise referral officer. Study 2 compared those who had attended and/or completed a 12-week ERS, and study 3 identified patterns of physical activity levels over a 12 month period for participants of the ERS. To gain an in depth understanding of the dimensions of participants on an ERS, qualitative analysis in study 4 reported findings from focus groups with overweight participants of the scheme on areas relating to their experiences of the ERS. Findings have shown interesting patterns between attendance, completion and long term sustainability to exercise behaviours and other variables. Previous research in the field has tended to focus the short term, rather than long term impacts on participants and sustainability.

7.2 Aims of evaluation

Study 1

1. To identify descriptive characteristics of the borough population, the referred population and those who attend or do not attend an ERS.

Study 2

2. To compare those who attend an ERS with those who complete an exercise referral scheme.
3. To compare those who complete an ERS, pre- and post- intervention.

Study 3

4. To investigate long term changes for those who have participated in an ERS.

Study 4

5. To engage overweight participants, on an ERS, in conversation relating to their experiences of ERS.

7.3 Key findings from evaluation

Study 1

- More females are referred to the ERS (60.8%), attend the ERS (80%) and complete the ERS (51%).
- Diabetics and heart attack patients are over represented within the ERS, when compared to the borough and asthmatics and overweight and obese patients are under represented within the referral population.
- 21% of all referred patients do not attend an exercise referral intervention.
- Attendance is significant to age, reason for referral and month of referral

Study 2

- Less than half (42%) of those, who initially attended, completed at 12 weeks.
- Gender and referral reason were not significant to completion; age range was significant to completion.
- Perceived levels of pre- intervention physical activity were not significant.
- 41.6% of participants considered themselves to be participating in the recommended levels of physical activity per week pre- intervention.
- Family ($p>0.05$) and friend ($p>0.05$) participation, and family reward ($p>0.05$), were not significant to completion and attendance of the ERS, although there were variations in these variables as the intervention progressed.
- Social support and levels of physical activity increase from pre- to post-intervention.

Study 3

- Physical activity levels are significantly greater post- intervention (12 weeks) than at baseline ($p<0.05$), but not at any other time point.

- Physical activity levels are not meeting the national recommendations for physical activity levels of 150 minutes of moderate intensity physical activity at any time point.
- Age range and referral reason appear to have little impact on long term physical activity participation.

Study 4

- Overweight individuals are uncomfortable in public environments with which they are not acquainted, due to feelings of self consciousness, lack of confidence, potential failure and physical restrictions. However, a positive, friendly exercise environment makes them less daunted.
- Participants, who were previously active, often gave up activity due to ill health or family commitments related to traditional gender roles.
- Overweight patients respect their GP's advice. However, are sometimes confused by the information they provide relating to the benefits of physical activity participation.
- Weight loss and increases in fitness were the main aims of the participants, and they perceived that this would be achieved through a combination of dietary restrictions and increases in physical activity.
- More holistic outcomes of the intervention provided participants with feelings of satisfaction, achievement and motivation. This was positive when despondency occurred, due to lack of weight loss.
- Same disease group interventions e.g. New Weighs group seem to be favourable to these overweight individuals, to provide support. Participating with others, rather than alone, was positive to attendance.
- Participants felt the intervention was the 'push' they needed to become physically active, and certain participants were enthusiastic about continuing the health behaviours after the 12 weeks.

- Previous barriers for becoming physically active, such as time and fatigue, were reduced, as a result of partaking in the intervention. However, at the final stage, participants felt 'lifted', 'restful', 'exuberant' and 'energetic'.
- 58% of participants completed the intervention and 69% of the participants were physically active, 6 weeks post- intervention. However, participants were not meeting the national recommendations for physical activity participation.
- Median weight loss was 8.0lb and 72% of respondents had lost weight.

7.4 Implications of findings

Of the 6640 individuals, who were referred to the ERS over a 5 year period (1997-2002), 21% (N=1393) did not attend the initial consultation. Furthermore, 42% (N=103) of individuals failed to complete the ERS, and although physical activity levels increased significantly post intervention after 12 weeks, this was not sustained over a 12 month period.

The fact that sustained increases in physical activity levels are not being achieved through ERS suggests that an ERS is not an effective means of increasing physical activity levels of clinically diagnosed individuals in primary care. However, rather than making ERS's obsolete, as a result of this evaluation, suggested methods of increasing their effectiveness will be discussed.

Although the following discussion is generalised to all ERS's, it is important to recognise that the findings may not be reproducible in all ERS's due to differences in intervention processes (referrals, intervention length, cost to participant) settings (home or facility based) and targets (participation in physical activity) as reported in Gidlow *et al.*, (2005). However, it is important to acknowledge herewith that similar evaluation outcomes have been identified in other ERS in the Northwest of England with similar intervention protocols (Harrison et al., 2005 and Dudgill et al., 2005).

Therefore, these findings and recommendations are not limited to this ERS alone and there is opportunity to develop other ERS interventions based on these findings.

7.4.1 Suitability of referrals

Determining patients who are suitable for referral onto an ERS is one method of improving ERS's and this took place within this evaluation. Suitability of patients was determined in studies 1, 2 and 3 by reason for referral, age, gender, month of referral and physical activity participation. The reasoning for certain subgroups being referred has been discussed in chapters 3, 4 and 5, and includes greater presentation at health professionals, greater health professional awareness, due to government policies and appropriate interventions for specific sub groups.

It appears that this ERS, as it currently operates, is less likely to meet the needs of males within the borough. Proportionately, there are 10% fewer males referred to the scheme than are residing in the borough (39% and 49%), as well as 22% fewer males than females referred (table 4.1). The greater referral rates for females (60.8%), in addition to females being significantly more likely to attend than their male counterparts ($P<0.00$), has led to 55% of the exercise referral population being females. This has been identified in other research (Biddle *et al*, 1994) and is discussed in greater detail in chapter 3. Furthermore, although females are more likely to be referred and attend an ERS, gender was not significant to completion in this study or long term physical activity levels. Thus, although males are less likely to be referred and attend an ERS, they are as likely to complete one, once they attend. This would suggest that if the referral process was improved for males, an ERS would actually be capable of increasing their physical activity levels.

In addition, whereas those with asthma and heart disease (heart attack, heart surgery, and angina) were more likely to attend and complete an ERS, those who were overweight and obese or had back pain were more likely to not attend and complete an ERS. Once again, this suggests that the referral process from health professionals

to the ERS, is not suitable for these sub groups. This requires further investigation to determine reasoning for this and to establish the causal factors in this discrepancy.

Lastly, those referred to an ERS in June were least likely to attend an ERS. It has been suggested in previous discussion that referrals are kept within manageable numbers to avoid long waiting times and ensure the efficient transfer of patients onto an ERS. ERS's should use audit data to assess DNA's on an annual basis and aim to achieve highest possible attendance rates. For example, within this study, December had the lowest non attendance rate of 11%. However, it was also the month in which there were fewest referrals. It is recommended that ERS's limit referrals from health professionals', dependant on staffing levels on the ERS at that current time. Further research assessing realistic goals for ratio of participant referrals to exercise professionals would be beneficial to avoid long waiting times. In addition, future research with patients who are referred and do not attend would allow an understanding of their reasoning for doing so.

Once suitability of a patient has been acknowledged, deciding what actions to take on the basis of this information are debatable. It would be far more cost effective to reduce referrals for those in whom an ERS is unlikely to be successful, such as overweight and obese individuals, and focus on those who will effectively increase and maintain physical activity levels, thus improving cost effectiveness and increasing appeal to government bodies (Wanless Report, 2002). In addition, this would allow more effort to be concentrated on fewer people, thus giving a more intensive and supportive service and therefore encouraging the likelihood of success (Harland *et al.*, 1999). However, the basis for avoiding referral for particular sub groups is impaired when we consider that Borrelli *et al* (2000), in their study of smoking cessation, concluded that those who had previously attempted to quit smoking were more likely to succeed. Moreover, Prochaska and DiClemente's (1983) transtheoretical model for behaviour change suggests that there may be many relapses, before an individual permanently changes behaviour. Therefore, re- referral onto, rather than exemption from, an ERS may prove successful in encouraging

sedentary individuals to become physically active. This may give individuals several chances to become physically active, and moreover, those who have not succeeded previously, should be encouraged to attempt again. Currently, individuals who have not succeeded are not encouraged to re attempt the process within this ERS.

In contrast, it is also proposed that this information is used to target subgroups that are less likely to attend e.g. overweight individuals, and from these make improvements to the quality of the intervention, to encourage attendance. This was the purpose of study 4, which aimed to understand the experiences of an overweight or obese individual during an ERS, to recognise why this group of people are more likely to not attend and complete an ERS. Following comments from overweight and obese individuals in the study 4, it is once again essential that we assess the process of referral from the health professional to arranging attendance at the initial consultation (with the ERS).

Referring health professionals have an important part to play in ERS, because they are in control of referrals to the ERS, as well as having the capacity to provide one of the first supportive systems within the ERS process. It is apparent that patients approve of health professionals' advice (Finch, 1997), and previous research has displayed the impact that lifestyle advice from health professionals can have on patients' behaviour (Wells *et al.*, 1984; Frank *et al.*, 1995; Harsha *et al.*, 1996; Finch., 1997; McKenna *et al.*, 1998; Harland *et al.*, 1999 and Halbert *et al.*, 2000). However, health professionals are not always interested in prescribing lifestyle interventions to patients (NAO, 2001). Lewis *et al* (2003) highlighted this in their study of patient and health professionals' relationship. The focal point of the research was the prescription of treatments and the differences between what the patient wanted (in most cases to avoid medication and change their lifestyle) and what the health professional prescribed. It appears that behaviour change is the preferred treatment of only some health professionals (such as practice nurses) who were far happier to encourage patients to change their lifestyle than to prescribe medication for illnesses such as CHD. This is going to contest the use of ERS in primary care unless referring health

professionals are encouraged to promote lifestyle change, rather than medication to patients. Training for health professionals is required to encourage this process.

Lewis, (2003) suggested that training for health professionals should focus on enhancing their listening skills, so that patients are able to choose their treatment and help to make treatments more effective. The development of ERS's to encourage other health professionals to refer to ERS is thus beneficial. In fact, these referring professionals may prove more important to an ERS success, due to time limitations within the GP's day, which are hugely problematic (Graham *et al*, 2005). Britten *et al.*, 2000 reported that these time limitations may hurry patients to make decisions about their treatments, and even presume they know patients' preferences. This will counter previous proposals for practice that encourage patient involvement in therapy, to lead to more realistic and therefore sustainable treatment decisions (Lewis *et al.*, 2003). Thus, encouraging referrals from health professionals, who have scope for longer consultation times with a patient, is a factor positive to the intervention, as indicated in study 4.

Finch (1997) recommended that GP's should be able to give personalised information regarding physical activity, provide information on local exercise facilities, along with personal prescriptions. However, the discussion of treatment options for patients has to come through well educated health professionals. As early as 1983, Young *et al.*, highlighted medics' demands for information on exercise. They surveyed medical students, of whom, 37% considered themselves ignorant of the medical aspects of exercise, and 63% considered themselves to receive too little information on the medical aspects of exercise. Almost 10 years later, Lewis *et al.*, (1991) recommended that teaching positive health behaviours in the first year of medical school would be advantageous, and this was reiterated by a sample of physicians (n=131), 78% of whom felt there was a definite need for an increase in exercise knowledge during medical school. Of the physicians, only 3% had taken part in a taught exercise-related college course, enabling them to understand the physiological need for exercise prescription (Williford *et al.*, 1992). To concur with this, Sims *et al.*, (2004)

aimed to train and support GP's in advising sedentary patients, through the development of a tool to assist them in doing so. Through the intervention, GP's knowledge and provision of physical activity increased. Based on GP involvement, cost effectiveness figures per patient (to become active enough to accrue health benefits) were convincing compared to disability adjusted life years saved. This demonstrates that interventions which increase health professionals' knowledge of physical activity can be a cost effective means of promoting physical activity in the community (Sims *et al.*, 2004).

Although there is a requisite for greater access by health professionals for exercise knowledge, without training, it is problematic (Lewis, 1991; Balde *et al.*, 2003; Sims *et al.*, 2004). This was highlighted in study 4, whereby certain participants had been confused by conflicting information given by some health professionals. With the current emphasis on medicines and drug therapy, it is likely that medics are unaware of how much physical activity is beneficial for health, and how a sedentary lifestyle is going to be detrimental to health (Riddoch in Taylor, 1998). Furthermore, inexperience of health professionals in behaviour change methodologies, such as the Transtheoretical model (Prochaska and DiClemente, 1983), may enlighten health professionals to suitable referrals. On the contrary, training health professionals' in motivational techniques (Miller & Rollnick, 1991) may encourage patients to attend an ERS. It is recommended that ERS's invest time and money to increase health professionals knowledge of exercise physiology and prescription (Lewis *et al.*, 1991., Williford *et al.*,1992 and Sims *et al.*, 2004), behaviour change methodologies (Miller & Rollnick, 1991 and Prochaska & DiClemente, 1983) and listening techniques (Lewis *et al.*, 2003). Lewis (1993) reported that training programmes and practical resources for health professionals increased confidence to refer patients to exercise programmes. Thus training is beneficial.

Overall, there is a definite need for education of health professionals on exercise and other positive lifestyle behaviours. In addition to ERS's supporting health professionals training, bodies such as the Medical Defence Union (MDU) (2005)

have reported offering 3 years training, so that doctors can become specialised sports and exercise specialists (www.the-mdu.com/gp/advice/article.asp), indicating the recent importance of sport and exercise within the medical profession. This will go someway to assisting this predicament. However, it will not reach the mass of health professionals, therefore, alternative methods for achieving this are required. The emphasis on training within medical qualifications for lifestyle behaviours is the only way to ensure all future health professionals are aware of the benefits of a physically active lifestyle.

It is proposed that, in addition to lack of knowledge and time to refer patients to an ERS, a quantity of health professionals are unsure of their medical litigation responsibilities in recommending exercise for patients (Graham *et al.*, 2005). The (MDU) primary role is "*to provide members with access to indemnity and to advise and assist with ethical and medico-legal problems*". Following the publication of the NQAF for ERS (2001a), the MDU affirmed that they had no concerns about the medical profession referring to an exercise professional who was a member of the Professional Register of Exercise and Fitness (PREF) (MDU, 2001(www.the-mdu.com/gp/advice/articple.asp)). After all, the suitability and safety of the patients lies with both the referring health professional and the exercise referral officer. This said, Graham *et al* (2005) found there was still concern from health professionals regarding this point, as the following quotation from a GP who did not refer patients to an ERS shows;

"....exercise, medical recommendation is a medico-legal case waiting to happen".

Other factors of importance in the referral process indicated in this evaluation include the preparation of written information to assist with behaviour change, the possibility of self- referral and ensuring health professionals' awareness of ERS's. The requisite for written information was highlighted in study 4 and concurs with previous research, which concluded that physical activity prescription together with written material, could produce short-term increases in physical activity (Smith *et al.*, 2000).

Thus, encouraging ERS's to provide health professionals with accurate written information, in addition to referring patients to an ERS, has the potential to increase physical activity levels.

In addition, including the option of self referral for those who are sedentary but who would like to partake in physical activity in a safe environment would be advantageous. After all, it has been suggested that those who implement change on their own are more likely to adhere (Schachter, 1982). The fact that they have approached a health professional with the intention of increasing their health is in line with Lewis *et al.*, (2003) proposal that health professionals should listen to and take account of what their patients are requesting. Thus, ERS's should support self referral in their protocol; as long as patients comply with their inclusion criteria (figure 4).

Finally, it was suggested in study 4 that health professionals were not aware of the process of ERS or even that they were available for their use. This awareness of ERS will come about as a result of positive feedback, both internally e.g. patient, and ERS feedback to health professionals, and externally through respected publications. As discussed in chapters 3 and 6, lack of feedback is problematic to referring health professionals (Graham *et al.*, 2005). Thus, enhancing this process will improve the ERS intervention. However, as an example of negative feedback, in a report of a meeting of the WHO Wellcome Trust Experts, (WHO, 2001) it was conveyed that smoking cessation, physical activity and dietary programmes were seen to be time consuming and lacking in evidence when compared to drug interventions for some members. If these are the opinions of those who influence world policies, then the promotion of lifestyle interventions within Primary Care may neither be funded or encouraged by health professionals.

This sentiment highlights the ongoing need to alter the perceptions for clinically diagnosed populations to be physically active. Means of addressing these problems include vigorous evaluation of safety and effectiveness of ERS's, which should enlighten health professionals to the benefits of physical activity for their patients.

Furthermore, this could encourage the publication of national guidelines for referring health professionals backed by the MDU or the British Medical Association (BMA), highlighting the possible benefits of such schemes for health. It is proposed that national guidelines have had an influence on referral to ERS already, due to the plentiful referrals for patients, with CHD and Diabetic patients, following publication of the National Service Frameworks for CHD (Doh, 2000a) and Diabetes (DoH, 2001b), and lack of referral of obese patients shown in study 1. After all, increases in knowledge and confidence for referral to ERS, may empower health professionals to suggest physical activity to patients as suggested by Lewis, (1993) which may in turn empower patients to be physically active (McKenna *et al.*, 1998; Jackson *et al*, 2005).

7.4.2 Indicators of success

To date, completion rates (those reaching end of 12 week intervention) have indicated success of an ERS, and previous research has shown improvements in levels of physical activity and health, as a result of participation e.g. Taylor *et al.*, 1998 and Harrison *et al.*, 2004. However, because the benefits of exercise to health occur and accumulate over time (ACSM, 1998, Blair *et al.*, 1995 and Woodward & Berry, 2001), attendance at a 12 week consultation should not be deemed as the only marker of attainment. Moreover, it is clear from this evaluation that physical activity levels following completion of an ERS are not significant; giving further reasoning for completion of an ERS not being the ultimate marker of success. The implementation of a 12 week tracking study within an overweight population in this research provided a novel insight into the successfulness of ERS for changing physical activity behaviours. It was clear that there were greater indicators of success than physical activity levels per se. Confidence in one's ability to exercise, enjoyment of a physically active lifestyle, increases in quality of life and motivation to continue exercising, should all be acknowledged as successful outcomes of an ERS.

The notion of attendance, completion and sustainability within any intervention is a complex one. Biddle and Mutrie (2001) discussed adherence and compliance in

relation to motivation to adapting and maintaining a physically active lifestyle (p. 43). Although the meaning of the words may be interlinked, they can have very different effects within an ERS (Gidlow *et al.*, 2005). For example, the use of the word compliance or adherence implies that someone has continued with the new behaviour, in this instance, physical activity. These words should be avoided, as within this study, due to the possibility that participants may complete the 12 week intervention, but may not still be physically active enough to meet national recommendations. Conversely, individuals may not have completed the intervention, yet may still be physically active on their own without the support of an ERS. The lack of consistency in terminology causes confusion when comparing one ERS with another, thus making it difficult to truly see the benefit of these interventions. It is recommended that all UK ERS's agree on terminology, for consistency, through a document, derived from the NQAF for ERS (DoH, 2001). Furthermore, previous studies have used a selection of markers for success such as attendance at final consultation (Lord & Green, 1995 and Dugdill *et al.*, 2005) 75% attendance (Taylor et al., 1998) and minutes of physical activity participation (Harrison et al., 2005) and therefore comparisons between intervention successes are complex. A definitive measure of ERS success would allow comparisons of different schemes along with tracking of success within the same intervention over time. The choice of this measure would be dependent on realistic goals (for clinically diagnosed, sedentary individuals who enter a 10-14 week intervention) and these goals would require much discussion. Ideally measurement to meet these goals would include actual physiological measures of physical activity participation, but realistically this would not be possible within a free living population and therefore self reported measures are traditional. Furthermore, following the recommendations in chapter 5 to extend the length of ERS interventions to 6 months, it would be of interest to compare the variation in length of ERS intervention (10-14 weeks (Gidlow *et al.*, 2005)) and variation in sustained physical activity participation.

However, complications are also caused by the problems associated with self reported physical activity measures (Shephard, 2003). As Riddoch stated "*People will report*

what they remember doing. They tend to remember the things they plan to do. If they went for a walk with the dog, they will remember that. What they do not remember are all the incidental things they do, like nipping up the stairs to the office on the floor above. Self-report measures have a fairly large amount of error built into them" (House of Commons report, 2003-4, p. 42). The IPAQ is an attempt to resolve these problems since it is intended for use internationally, as well as in varying forms when used within different population groups (http://www.ipaq.ki.se/). However, it would be ideal for ERS to have a physical activity measure specifically for clinically diagnosed, currently sedentary populations.

Previous evaluation of primary care physical activity interventions have questioned their success, due to limited completion rates and increases in participants' physical activity levels (Dugdill *et al*, 2005; Gidlow *et al*., 2005 and Harrison *et al*., 2005). Herewith, ERS is perceived as a favorable investment for increasing the health of a population, due to the fact they have the potential to increase physical activity levels at all. This is due to previous research indicating that the transition out of the sedentary category, even though not achieving recommendations, is important for the health of the general population (Haskell, 1994; Pate *et al*, 1995 and NQAF for ERS (DOH, 2001a). Thus, the fact that individuals are moving from being sedentary to slightly active may bring about increases in health that are more important (e.g. an elderly individual maintaining independence whilst living at home) than interventions aiming to achieve national targets with already active individuals.

However, it is imperative that ERS's start to understand how to increase long term physical activity levels and stop focusing on completion rates. The percentages of participants who attend and remain active will be influenced by the quality of the service that is provided. If ERS's concentrate primarily on throughput, rather than successful behaviour change, as they appear to have done thus far, it is unlikely these figures will ever increase. A key recommendation of this evaluation is that ERS assume longer intervention time frames for longer term changes in physical activity. It is proposed that this time frame is up to 6 months in length, due to the projected

increases in physical activity in study 3. In addition, it is proposed that interventions concentrate on providing a more intense intervention for fewer referrals, as has been proposed advantageous previously (Smith, 2000 and Hillsdon, 2004). However, this would require government negotiating more realistic targets when setting Local Area Agreements (ODPM, 2005) for service provision. An alternative option for this increased supportive intervention is a link with the governments' new Health Trainer schemes which were brought about as a result of the Department of Health's White Paper (2004c). Not only could Health Trainers refer sedentary individuals to an ERS, there is also the possible provision of support through a 'buddying' system.

Within this evaluation, it is apparent that pre- intervention physical activity levels are greater for those who do not complete the ERS, and this complies with previous research (Lord and Green, 1995; Taylor *et al.*, 1998). Thus, it is feasible to suggest that those who do not complete the scheme continue to be active outside the boundaries of the ERS. Therefore, using completion as the ultimate marker of success may provide a very biased outlook of their benefits, as it cannot be determined that these individuals, who do not complete an ERS, are inactive. It is suggested that future research investigates actual physical activity levels in those who do not complete an ERS.

7. 5 Recommendations for ERS's

As a result of the evaluation and experience gained through carrying out the evaluation, recommendations have been made for comparable ERS's.

7.5.1 Realistic goals

There is a need for realistic aspirations for ERS's; a short term intervention does not appear to be beneficial for health behaviours long term. However, there needs to be a focus on those who have changed their behaviour and an identification of the impact it has had on those individuals' lives. Emphasis should be placed on even small

amounts of increases in physical activity, as this is where the greatest health benefits occur (Haskell, 1994; Pate *et al*, 1995). In addition, there must be recognition and acceptance that certain individuals will not change behaviours regardless of what is offered to them.

Furthermore, an ERS should not be expected to meet the needs of every individual. Certain participants have been highlighted within this study as not being suitable for current ERS. If certain subgroups require targeting e.g. males, then ERS should be altered to better suit their needs. It is proposed that this would require improved access to services i.e. exercise classes outside normal working hours, male instructors and male orientated exercise classes. Likewise, as the benefit of same disease exercise classes has been shown within this study, the proliferation of classes designed for same disease groups offering greater support is encouraged.

Moreover, emphasis should be placed on primary, preventative, physical activity promotion schemes to reduce the rates of disease that current ERS's aim to treat. This will require the development of tools to educate health professionals in techniques of listening (Lewis *et al*., 2003), behaviour change theories (Miller & Rollnick, 1991 and Prochaska & DiClemente, 1983) and exercise prescription (Lewis *et al*., 1991., Williford *et al*.,1992 and Sims *et al*., 2004).

Finally, the greater potential for schemes within the NHS, not just primary care, needs to be recognised. Referrals whilst patients are awaiting hospital appointments (up to 15 months (Wanless Report, 2002) at present)) could reduce need for consultation times, aid weight loss for those obese individuals requiring operations, and has the potential to reduce the need for some medical treatments and post-surgical recovery times.

7.5.2 ERS practice

One of the most pressing questions, as an outcome of this evaluation, is why ERS's run between 10-14 weeks, as there is no clear rationale for this time frame. The evaluation has proposed how physical activity levels could meet national physical activity recommendations, if schemes were run over longer time frames. If ERS's continued over a 6 month time period, then it is possible that national recommendations could be met. Study 1 highlighted that months in which referrals were greatest were months in which DNA rates were greatest. This concurs with previous research, indicating that smaller schemes have greater adherence rates (Taylor, 1998). Therefore, elongated, more intimate protocols, rather than extensive schemes should be adapted by ERS's. This is imperative, due to the characteristics of participants on the schemes, who are of chronic ill health. As part of the intimacy of the ERS, it is proposed that support mechanisms, such as written or telephone correspondence, should be increased in frequency and type, to provide a more intense intervention, as suggested by Smith (2000) and Hillsdon, (2004). Furthermore, the provision of support by others, by means of same disease group interventions, and/or 'buddying' systems, can be effective and limit staffing costs for ERS.

The term ERS should be replaced by 'physical activity referral schemes' (Dugdill *et al.*, 2005) to encompass HEPA and non structured physical activity. In addition, the term GP ERS should be made obsolete, to promote the inclusion of all referring health professionals. This will be enhanced through standardised, recognised and implemented protocols for health professionals to work from, during referrals from government bodies and respected organisations such as the MDU.

Finally, limits should be set for number of referrals from health professionals per month, dependent of staffing levels. This is to ensure that waiting times from referral to initial consultation are kept to a minimum to support attendance to the ERS. Further research to determine feasible staff to participant ratios will allow ERS's to set limits for this.

7.5.3 Responsibility for health

For over 10 years, there has been an emphasis on the need for a 'proper balance between individual responsibility and government action' (DoH, 1991, pp. v) for good health. The current expectations that ERS's can change a population's activity level means that they will always be unsuccessful. Therefore, there needs to be a health promotion emphasis on population 'self-care', so that the onus is not wholly on government bodies to protect individuals from illness or provide good health. Education of populations allowing them to increase knowledge is essential, so that individuals understand the risks that they are placing upon themselves, through lifestyle behaviours. The Department of Health's Choosing Health White Paper (2004c) highlighted this and aims to provide disadvantaged areas in the UK with the knowledge and provision to make healthier choices to reduce the risk of CHD and cancer through 'Health Trainers'.

Further responsibility for patients' control over health occurs during the referring health professional consultation, whereby health professionals should not refer patients unless the patient is ready to modify lifestyle behaviours. Thus, they want to partake in physical activity. Moreover, patients should be allowed to refer themselves onto an ERS, as long as they are inactive and their health would benefit an active lifestyle.

Finally, investing time and money in training staff and referring health professionals so they can provide accurate and relevant information to patients is essential, to avoid patient confusion regarding behaviours. In addition, linking with universities to provide training and education, so that qualified exercise referral officers are available to staff the schemes, as they expand, is crucial.

7.6 Future research

The novelty of ERS's, and the confusion around their success for increasing levels of physical activity, mean that further research into their use is required. Moreover, outcomes from this evaluation pose additional questions, which if answered, would benefit ERS's. The following are areas which are recommended for research studies.

Referring health professionals

- To discover when and why health professionals are referring patients, and if they follow a protocol for this. Large scale self- report questionnaires (inquiring about methods of choosing patients for referral, numbers of referrals and how many referrals are turned down) to gain a large sample size would be beneficial in this research topic.
- Referring health professionals' acquisition of information through their academic training and how this impacts on frequency of physical activity promotion.

Participants

- Mixed methodological study to gain more in depth information on individuals who do not attend and complete an ERS. Although this evaluation has identified who they are, it has not identified why they have not attended.
- Greater understanding of the gender split of referrals; why males are not being referred as often as females and DNA more frequently.
- Further investigation of referral reason and completion and non completion of an ERS, (with greater sample sizes than were available within this study) to determine suitability of patients for referral to an ERS.
- Additional information on the impact of social support on participants in an ERS. Furthermore, the development of a tool to measure social support,

within this population, would allow individuals' requirement for levels of social support to be measured.

- Further qualitative investigation with participants of referral reasons other than 'overweight' to allow comparisons between the investigated sub group herewith and those of other referral reasons. This would give greater understanding of the needs of different participant subgroups.
- Investigation of incentives for patients for attendance and completion of an ERS.

ERS protocol

- To determine if there is a relationship between increases in waiting times for initial consultation and patient attendance to ERS.
- Currently most ERS's run between 10-14 weeks, however there is no rationale for this time. It has been proposed in this study that a 6 month ERS intervention would be able to promote physical activity levels comparable to the national recommendations. However, establishment of the optimum time period for schemes to increase success is vital to the future of ERS.
- Analysis of longer term (12 months+) behaviour change, for those who have been referred to an ERS would validate the ability of ERS to promote a sustained physically active lifestyle.
- As reported in chapter 5, physical activity increases at 12 months were not significant. However, it is proposed that a similar tracking study is carried out within an ERS intervention that lasts as long as 6 months. As reported in study 3, this is the point at which physical activity levels could reach national recommendations.
- Determining feasible staff to participant ratios, (to enable limitations on number of referrals per month from referring health professionals), would help PCT's set LAA's and aim to reduce numbers of referrals that do not attend an ERS per month.

- Collection of larger samples enabling statistical analysis of the effect of social support and physical activity over time.
- Cost effectiveness versus drug therapy studies, to determine success of ERS compared to success of drug intervention on a monetary level.
- Further research into risks associated with exercise within clinical populations to build greater confidence in ERS's by both the health professionals and relevant population. This may in turn increase participant referrals and attendance.

7.7 Summary

The use of ERS's as a method of promoting physical activity, through primary care, has been evaluated. The evaluation has identified those who are more likely to attend and complete an ERS and sustain a physically active lifestyle, as a result of participation. This information should lead to modifications in the referral process. Furthermore, the concept of a tracking focus group study provided a novel opportunity to discuss the experiences of overweight participants partaking in an ERS.

The findings have provided a further knowledge base for the use of ERS's as a method of increasing physical activity in primary care. Recommendations for ERS's and further research have been suggested.

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APPENDICES

Appendix 1-

Published documents relating to physical activity and health in the UK.

Appendix 1- Published documents relating to physical activity and health in the UK

Physical activity

Health Education Authority and Sports Council. (1992) **Allied Dunbar National Fitness Survey**. London. Health Education Authority.

Biddle S., Fox, K and Edmunds, L. (1994) Physical Activity promotion in primary health care in England. Final research report. **Health Education Authority**: London. Department of Health (1991)

Fentem, P. and Walker, A. (1994) setting targets for England: challenging, measurable and achievable. In: **Health Education Authority. Moving on. A report of the Health education Authority symposium to agree health education messages for promoting physical activity in England**. Pp.58-76. Health Education Authority: London.

Whitehead, M. (1995) Physical Activity: Health Update 5. **Health Education Authority**: London

Taylor, A.H. (1996) Evaluating GP exercise referral schemes: findings from a randomised controlled study. Topic Report 6. **Chelsea School Research Centre**, University of Brighton: Brighton

Department of Health (1996) **Strategy Statement on Physical Activity**. Department of Health: London.

Riddoch, C., Puig-Ribera, A and Cooper, A. (1998). **Effectiveness of physical activity promotion schemes in primary care. Health Promotion effectiveness reviews**. Health Education Authority. London.

Health Education Authority (1999) **Physical Activity and Inequalities. A briefing paper.** Health Education Authority, London.

Encouraging walking: advice to local authorities (2000). **Department of Transport, Environment and the Regions (DETR)** http://www.dft.gov.uk/stellent/groups/dft_susttravel/documents/page/dft_susttravel_504172.pdf

Foster, C (2000) **Guidelines for health-enhancing physical activity promotion programmes.** British Heart Foundation Health Promotion Research Group. Oxford

Game Plan: A strategy for delivering Governments Sport and Physical Activity Objectives (2002). **Department of Culture, Sport and Media.** Strategy Unit. Crown Publications: London.

Department of Health (2001) **Exercise Referral Schemes: A National Quality Assurance Framework.** London.

Department of Health (2004) **At least five a week: Evidence on the impact of physical activity and it's relationship to health.** London.

Hillsdon, M., Foster, C., Naidoo, B and Crombie, H. (2004) **The Effectiveness of public health interventions for increasing physical activity among adults: a review of reviews. Evidence Briefing.** Health Development Agency.

Walking & Cycling: an Action Plan (2004) **Department of Transport (DFT)** http://www.dft.gov.uk/stellent/groups/dft_susttravel/documents/downloadable/dft_susttravel_029204.pdf

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Health

Health Education Authority (1994) Health Screening; The facts. **Healthlines**, April, 8

Department of Health (1999) **Saving Lives: Our Healthier Nation.** HMSO: London.

Department of Health (1999b) **Health Survey for England, 1998**. Department of Health: London.

Joint Health Surveys Unit on behalf of the Department of Health (1999) **Health Survey for England 2001**. Stationary Office: London.

Department of Health (2000b). **Health Survey for England 1998**. Stationary Office: London.

Department of Health (2002) **Annual Report of the Chief Medical Officer**. London: DOH.

Joint Health Surveys Unit on behalf of the Department of Health (2002) **Health Survey for England 2001**. Stationary Office: London

The Health of the Nation; a strategy for health in England. London: HMSO

Department of Health (2004c) **Choosing Health: Making Healthier Choices Easier**. London

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Obesity

Obesity Resource Information Centre (1997) **Physical Activity and Obesity**. Bristol: ORIC.

Health Survey for England 1998 (1999). **Prevalence of morbid obesity, obesity and overweight by sex and social class, 1998, England.**

National Audit Office (2001) **Tackling Obesity in England**. The Stationary Office: London.

Dr Foster Limited (2003) **Obesity Management in the UK**.

Mulvihill, C and Quigley, R. (2003) The management of obesity and overweight: an analysis of reviews of diet, physical activity and behavioural approaches. **Health Development Agency**: London.

Diabetes

Department of Health (2001). **National Service Framework for Diabetes Standards**. London

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CHD

Department of Health (2000a). **National Service Framework for coronary heart disease**. London

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Appendix 2-

The evaluation sub samples

Sub sample groups for the Evaluation of an Exercise Referral Scheme in the Northwest of England

Appendix 3-

The exercise referral scheme evaluation questionnaire

CONFIDENTIAL

STEPS TO HEALTH PRE EXERCISE QUESTIONNAIRE
PLEASE PRINT ALL INFORMATION

NAME: _____

ADDRESS: _____

_____

POST CODE:_____ D.O.B.:_____ SEX: MALE/FEMALE

HOME TEL: _____ EMERGENCY NUMBER: _____

Is there a history of heart disease or strokes in your family? Yes No

Please give details:_____

Has a doctor ever said that you have a heart condition? Yes No

Have you ever been told that your blood pressure was too high? Yes No

Do you ever have chest pain? Yes No

Do you ever feel faint or have spells of severe dizziness? Yes No

Do you suffer from back pain or aching joints? Yes No

Do you suffer from back pain or aching joints? Yes No

Do you suffer from any of the following?
If yes, please state:

Diabetes ☐ Asthma ☐ Bronchitis ☐ Arthritis ☐

Epilepsy ☐ Anxiety ☐ Stress ☐ Depression ☐

Are you suffering from a recent or recurring injury? Yes No

Have you had any serious illness or been in hospital during the last year? Yes No

Are you currently suffering/recovering from a cold, virus or illness? Yes No

Are you pregnant or have you recently had a baby? Yes No

Have you had recent illness, surgery, medical conditions not yet mentioned? Yes No

If yes please state:

_____

_____

Please list medication currently taken: _____

_____

EXERCISE PREFERENCES

Which activities would you be interested in participating in (please tick any one or more categories)

Circuit training	☐	Health & fitness suite	☐	Low impact aerobics	☐
Keep Fit	☐	Swimming	☐	Aqua aerobics	☐
Swimming lessons	☐	Walking	☐	Chair base exercise	☐
Gentle exercise	☐	Home exercises	☐		

Any other, please state _____

Considering a **7-day period** (a week), how many times on average do you do the following kinds of exercise for **more than 15 minutes** during your **free time** (write on each line the appropriate number)

Times per week

A STRENUOUS EXERCISE (HEART BEAT RAPIDLY)
(ie running, jogging, hockey, football, soccer, squash, basketball, vigorous swimming, vigorous long distance bicycling, using cardio vascular gym equipment, aerobics) _____

B MODERATE EXERCISE (NOT EXHAUSTING)
(ie fast walking at a brisk pace, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, digging, cleaning windows, washing/mopping floors, popular and folk dancing, golf) _____

C MILD EXERCISE (MINIMAL EFFORT)
(ie walking at slow pace, fishing, bowling, yoga, dusting, hoovering) _____

The recommended amount of physical activity per week is 30 minutes on most days of the week, would you say you participated in these amounts? Yes/No

Please tick **one** box that describes how you feel about exercise at the moment

A I do not plan to start exercising in the next 3 months ☐
B I do not exercise but have been thinking about starting within the next 3 months ☐
C I get some exercise but not regularly ☐
D I have been exercising on a regular basis but not for as long as 3 months ☐
E I exercise on a regular basis and have been doing so for the previous 3 months ☐
F A year ago I was physically active on most days, but in the last few months have been less active ☐

ACTIVITY SESSIONS

Ideally, what are the best times/days of the week for you to take part in an activity programme?

_____

What would you like to get out of your activities? _____

_____

_____

GHQ QUESTIONNAIRE

We should like to know how your health has been in general, over the last few weeks

Remember that we want to know about present and recent complaints, not those that you had in the past.

Please answer all the questions by circling the answers that you think most applies to you. Please circle just one answer on each line.

For example: Better than Usual | Same as usual | Less than usual | Much less than usual

HAVE YOU RECENTLY:				
Been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
Had difficulty sleeping?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt that you are a useful part in things?	More so than usual	Same as usual	Less so than usual	Much less than usual
Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less than usual
Felt consistently under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less able than usual	Much less than usual
Been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less than usual
Been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling reasonably happy, all things considered?	More so than usual	About the same as usual	Less so than usual	Much less than usual

Thank you for filling in this questionnaire

Please rate each questions ***twice***. Under ***family***, rate how often anyone living in your household has said or done what is described during the last 3 months. Under ***friends***, rate how often your friends, acquaintances or co-workers have said or done what is described during the last 3 months.

Please write ***one*** number from the following rating scale in each space

None	**rarely**	**a few times**	**often**	**very often**	**does not apply**
1	**2**	**3**	**4**	**5**	**6**

During the past three months, my family (or members of my household) or friends:

	Family	Friends
A Exercised with me	.....	.....
B Offered to exercise with me	.....	.....
C Gave me helpful reminders to exercise ('are you going to exercise tonight?)	.....	.....
D Gave me encouragement to stick with my exercise programme	.....	.....
E Changed their schedule so we could exercise together	.....	.....
F Discussed exercise with me	.....	.....
G Complained about the time I spend exercising	.....	.....
H Criticised me or made fun of me for exercising	.....	.....
I Gave me rewards for exercising (bought me something or gave me something I like)	.....	.....
J Planned for exercise on recreational outings	.....	.....
K Helped plan activities around my exercise	.....	.....
L Asked me for ideas on how *they* can get more exercise	.....	.....
M Talked about how much they like to exercise	.....	.....

WIGAN COUNCIL
LEISURE & CULTURAL SERVICES DEPARTMENT
INFORMED CONSENT

The activity programme given to you will be designed based upon the information you supply and from any health checks taken. It is essential that you follow the guidelines for exercising safely given to you by the Activity Referral Officers.

I have read and answered all questions in the health/lifestyle questionnaire as honestly as possible. If, at any time my answers to any of the questions change I will inform the Referral Officer and Fitness Instructor accordingly.

I hereby confirm that I am voluntarily engaging in a physical activity programme and that I am responsible for my own Health & Safety throughout.

Name	Signed	Date
_____	_____	_____
Referral Officers Name	Signed	Date
_____	_____	_____

Activities Prescribed

1 _____ 2 _____

3 _____ 4 _____

What is your ethnic group? (please tick the one appropriate box to indicate your cultural background)

Black or Black British	☐	White	☐	Chinese	☐
Asian or Asian British	☐	Mixed	☐	Any other group	☐

Lifestyle Questionnaire

Do you smoke? Yes ☐ No ☐

If yes, please indicate how many cigarettes you have per day _____

Do you drink alcohol? Yes ☐ No ☐

If yes, please state how many units per week _____
(1 unit = ½ pint beer, 1 glass of wine or 1 shot of spirit)

GP Name & Address

_____

Appendix 4-

Health professional referral forms

STEPS TO HEALTH EXERCISE REFERRAL

CONFIDENTIAL

PLEASE PRINT ALL INFORMATION

NAME..... DATE OF BIRTH.....

ADDRESS.....

..... POST CODE ..... SEX MALE/FEMALE TEL: .....

Medical Diagnosis .....

..... Blood Pressure ..... Resting Pulse .....

Main Reason for Referral to Exercise .....

.....

CHD RISK FACTORS

Weight Control ☐
Hypertension ☐
Sedentary ☐
CVA ☐

Peripheral Vascular Disease ☐

Hyperlipidemia ☐
Smoking ☐
Depression/ Anxiety ☐

CHRONIC DISEASE

Reversible

Asthma/COAD ☐
Diabetes ☐
Thyroid ☐
Pain ☐

SKELETAL DEGENERATION

Arthritis ☐
Osteoporosis ☐

Physical Disabilities ☐

CARDIAC REHABILITATION

Angina ☐
Post MI ☐
Post Surgery ☐
Heart Failure ☐

Post Cancer Treatment ☐

Post Childbirth ☐

Post Surgery Rehabilitation ☐

IF CARDIAC REHAB

Direct Referral from Cardiac Rehab:
Exercise ECG took place on
.....
Time completed
.....
Reasons for stopping
.....
.....
.....

Other (Please state) .....

Medication currently taken .....

.....

Further comments .....

.....

.....

In my opinion this patient is medically fit to undertake a suitable exercise programme:

Referred by (Dr/PN/Other) .....

Signed.....

GP & Surgery of Referral .....

Date of Referral .....

Practice Stamp

Preferred Leisure Centre: Hindley, Howe Bridge, Wigan Pool, Ashton or Robin Park (please circle as appropriate)

SEE INFORMATION LEAFLET FOR FURTHER DETAILS ON THE SCHEME

Please contact the Exercise Referral Officer at your preferred leisure centre - Steps to Health is a partnership between Health and Leisure Services in Wigan

Appendix 5-

International Physical Activity Questionnaire (IPAQ)

INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think *only* about those physical activities that you did for at least 10 minutes at a time.

1. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

   _____ **days per week**

   No vigorous physical activities ***Skip to question 3***

2. How much time did you usually spend doing **vigorous** physical activities on one of those days?

   _____ **hours per day**

   _____ **minutes per day**

   Don't know/Not sure

Think about all the **moderate** activities that you did in the **last 7 days**. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

   _____ **days per week**

   No moderate physical activities ***Skip to question 5***

4. How much time did you usually spend doing **moderate** physical activities on one of those days?

_____ **hours per day**

_____ **minutes per day**

Don't know/Not sure

Think about the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

_____ **days per week**

No walking ***Skip to question 7***

6. How much time did you usually spend **walking** on one of those days?

_____ **hours per day**

_____ **minutes per day**

Don't know/Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the **last 7 days**, how much time did you spend **sitting** on a **week day**?

_____ **hours per day**

_____ **minutes per day**

Don't know/Not sure

This is the end of the questionnaire, thank you for participating.

Appendix 6-

Consent form for focus groups

Liverpool John Moores University
Centre for Sport and Exercise Sciences
School of Health and Human Sciences
Henry Cotton Campus
Liverpool
L3 2ET

Consent form
The Evaluation of the Steps to Health Scheme- Wigan

I, ... agree to take
(**Subject's** full name)*

part in the above named project/procedure, the details of which have been fully explained to me and described in writing.

- I have been given the opportunity to ask questions
- I understand that I can withdraw from the study at any time without giving any reason
- I understand that my treatment will not be affected

Signed..... Date .....
(Subject)

I,..... certify that the
(**Investigator's** full name)*

details of this project/procedure have been fully explained and described in writing to the subject named above and have been understood by him/her.

Signed..... Date .....
(Investigator)

I, ... certify that the details
(**Witness** full name)

of this project/procedure have been fully explained and described in writing to the subject named above and have been understood by him/her.

Signed..... **Date** .....
(Witness)

Appendix 7-

Six week post course new weighs questionnaires

New Weighs Evaluation Questionnaire

In answering the following questions:

- **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal
- **Moderate** physical activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal

1a During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics or fast bicycling?

_____ days per week ☐ None (go to Question 2a)

1b How much time in total did you usually spend on one of those days doing vigorous physical activities? _____ hours _____ minutes

2a During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace or doubles tennis? Do not include walking.

_____ days per week ☐ None (go to Question 3a)

2b How much time in total did you usually spend on one of those days doing moderate physical activities? _____ hours _____ minutes

3a During the last 7 days, on how many days did you **walk** for at least 10 minutes at a time? This includes walking at work and at home, walking to travel from place to place and any other walking you may do solely for recreation, sport, exercise or leisure.

_____ days per week ☐ None (go to Question 4a)

3b How much time in total did you usually spend walking on one of those days?

_____ hours _____ minutes

3c At what pace did you **usually** walk? Did you walk at:

☐ a **Vigorous** pace, that makes you breathe much harder than normal

☐ a **Moderate** pace, that makes you breathe somewhat harder than normal

or

☐ a **Slower** pace where there is no change in your breathing

4a The last questions are about the time you spend sitting each day while at work, at home, while doing course work and during leisure time. This includes time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television.

During the last 7 days, how much time in total did you usually spend *sitting* on a **week day**?

_____ hours _____ minutes

4b During the last 7 days, how much time in total did you usually spend *sitting* on a **weekend day**?

_____ hours _____ minutes

Please tick **one** box that describes how you feel about exercise at the moment

A I do not plan to start exercising in the next 3 months ☐

B I do not exercise but have been thinking about starting within the next 3 months ☐

C I get some exercise but not regularly ☐

D I have been exercising on a regular basis but not for as long as 3 months ☐

E I exercise on a regular basis and have been doing so for the previous 3 months ☐

F A year ago I was physically active on most days, but in the last few months have been less active

5. Please circle the following regarding your diet;

I am currently eating a diet that is;	low fat	**or**	high fat
	low fibre	**or**	high fibre
	low salt	**or**	high salt
	low sugar	**or**	high sugar

6. I am currently eating ___ portions of fruit and vegetables each day.

7. Did you complete the New Weighs course? (Please circle) **Yes** **No**

If not, what prevented you from completing it?

_____

8. Have you lost weight since you started the New Weighs course? (Please circle)

Yes **No**

9. How much weight, if any have you lost since January 2004?

_____ lbs **or** _____ kg

10. Do you know how many inches you have lost since January 2004?

Inches

_____

11. Are there any other positive outcomes of being referred to the New Weighs course?

_____

_____

_____

Thank you for taking the time to complete this questionnaire.

Please return it in the stamped addressed envelope as soon as possible.

References

Abusabha, R and Woelfel, M (2003) Qualitative vs. quantitative methods: Two opposites that make a perfect match. **Journal of the American Dietetic Association.** Vol. 103, No. 5, pp. 566-569.

Ainsworth, B.E., Haskell, W.L., Leon, A. S., Javobs, D.R., Montoye, H.J., Sallis, J.F and Paffenbarger, R.S. (1993) **Medicine and Science in Sport and Exercise.** Vol 1. Pp. 71-80.

American College of Sports Medicine (1998) Position Stand: The recommended quantity and quality of exercise for developing and maintaining cardio respiratory and muscular fitness, and flexibility in health adults. **Medicine and Science in Sport and Exercise.** Vol. 30, No. 6, pp. 975-991.

American College of Sports Medicine (2000) **Guidelines for Exercise Testing and Prescription. Sixth Edition.** Lippincott Williams & Wilkins: USA

Anderson, R.E., Blair, S.N. Cheskin, L.J., and Barlett, S.J. (1997) Encouraging patients to become more physically active: the physician's role. **Annals of Internal Medicine.** Vol. 129, No. 5, pp. 395-400.

Anderson, J and Fox, K (1998) A social support scale for exercise in a clinical setting: Preliminary evidence of construct validity. **Journal of Sports Science.** Vol.16, No.1 p71.

Anthony, J.L and O'Brien, W.H. (2002) The effects of a Group-based Social Support intervention on Cardiovascular Reactivity. **Small Group Research.** Vol. 33, No. 2. pp. 155-180.

Antonucci, T.C., Akiymam, H. and Lansford, J.E. (1998) Negative Effects of Close Social Relations. **Family Relations.** Vol.47, No. 4, Oct, pp. 379-384.

Armstrong T, Bauman A. & Davies J. (2000) **Physical activity patterns of Australian adults.** AIHW Canberra.

Balde, A., Figueras, J., Hawking, D.A and Miller, J.R (2003) Physicians advice to the elderly about physical activity. **Journal of Aging and Physical Activity**. Vol. 11, pp. 90-97.

Balint, M. (1961). The Doctor's Responsibility. In Balint, A, Balint E (eds) **Psychotherapeutic Techniques in Medicine**, pp. 14-106. Tavistock Publications: London.

Barber, N (1995). What constitutes good prescribing? **British Medical Journal**. Vol. 310, pp. 923-925.

Barbour, R.S and Kitzinger, J (1999) **Developing Focus Group Research, Politics, Theory and Practice**. SAGE Publications: London.

Bartlett, D (1998) **Stress. Perspectives and Processes**. Open University Press. Buckingham, UK.

Barlett, H., Howells, K., Ashley, A. (1994) **Evaluation of Sonning Common Health Walks Scheme**. Oxford Centre for Health Care Research and Evaluation. Oxford Brookes University. Oxford.

Bell, J (1993) **Doing your Research Project. A guide for first-time researchers in Education and Social Science. 2nd Edition**. Open University Press: UK.

Bethall, H.J, Turner, S.C, Evans, J.A and Rose, L. (2001) Cardiac Rehabilitation in the United Kingdom. How complete is the provision? **Journal of Cardiopulmonary Rehabilitation**. Vol. 21, pp. 111-115.

Biddle S., Fox, K and Edmunds, L. (1994) Physical Activity promotion in primary health care in England. Final research report. **Health Education Authority**: London.

Biddle, S.J.H & Mutrie, N. (2001) **Psychology of Physical Activity. Determinants, well-being and interventions**. Routledge. London and New York.

Black N. (1994) Why we need qualitative research. **Journal of Epidemiology and Community Health**. Vol. 48, pp. 425-426.

Blair, S.N (1995) Exercise Prescription for Health. **Quest**. Vol. 47, p. 338-353.

Bloom, J.R., Stewart, S.L., Johnston, M., Banks, P. and Fobair, P. (2001) Sources of Support and the Physical and Mental Well-being of Young Women with Breast Cancer. **Social Science and Medicine**. Vol. 53, No. 11, Dec, pp. 1513-1524.

Booth, F.W., Gordon, S.E., Carlson, C.J (2000) Waging war on modern chronic diseases: primary prevention through exercise biology. **Journal of Applied Physiology**. Vol. 88. Pp. 774-787.

Borg, W.R (1981) **Applying Educational Research: A Practical Guide for Teachers**. Longman: New York.

Borrelli, B., Hogan, J.W., Bock, B., Pinto, B., Roberts, M and Marcus, B. (2000) Predictors of Quitting and Dropout among Women in a Clinic-based Smoking Cessation Program. **Psychology of Addictive Behaviours**. Vol. 16, No. 1, pp.22-27.

Bouchard, C., Shephard, R.J. and Stephens, T. (1994) **Physical Activity, fitness and health: international proceedings and consensus statement**. Champaign, IL. Human Kinetics.

Bouchard, C and Despres, J.P (1995) Physical activity and health: Atherosclerotic, metabolic and hypertensive diseases. **Research Quarterly for Exercise and Sport**. Vol. 66, pp. 268-275.

Bowling, A. (1995) **Measuring Disease. A Review of Disease-Specific Quality of Life Measurement Scales**. Open University Press. UK.

Brady, A.J.B., Oliver, M.A and Pittard, J.B. (2001) Secondary prevention in 24 431 patients with coronary heart disease: survey in primary care. **British Medical Journal**, Vol. 322, pp. 1463

Brawley, L.R. (1993) The practicality of Using Social Psychological Theories for Exercise and Health Research and Intervention. **Journal of Applied Sport and Psychology**. Vol. 5., pp. 99-115.26/03/03

British Heart Foundation and Countryside Agency (2001-2005) **Walking your way to Health Initiative.**

British Heart Foundation Statistics (2004) http://www.heartstats.org/latestadditions.asp

British Medical Association (1995). **Royal Pharmaceutical Society of Great Britain**. British National Formulary. London. BMA and Pharmaceutical Press.

British Medical Association (2005) **Preventing Childhood Obesity**. BMA Policy Report.

Brownell, K.D., Stunkard, A.J., Albaum, J.M. (1980) Evaluation and modification of exercise patterns in the natural environment. **American Journal of Psychiatry**. Vol. 137, pp. 1540-1545.

Brownell, K.D., Marlatt, G.A., Lichtenstein, E and Wilson, G.T (1986) Understanding and Preventing Relapse. **American Psychologist**. Vol. 41, No. 7, pp. 765-782.

Brummett, B.H., Barefoot, J.C., Siegler, I.C., Clapp-Channing, N.E., Lytle, B.L., Bosworth, H.B., Williams, R.B and Mark, D. B. (2001) Characteristics of Socially Isolated Patients with Coronary Artery Disease who are at elevated risk for mortality. **Psychosomatic Medicine**. Vol. 63, p. 267-272.

Byrne, M. and Campbell, N.C (2003) Promoting behaviour changing in patients with coronary heart disease- a consensus study in two countries with different health care systems. **European Journal of General Practice**. Vol. 9, No. 4, pp. 134-140.

Burton, L.C., Paglia, M.J., German, P.S., Shapiro, S and Damiano, A.M. (1995). The effect among older persons of a general preventative visit on three health behaviours: smoking, excessive alcohol drinking, and sedentary lifestyle. **Preventative Medicine**. Vol. 24, pp. 492-497.

Calfas, K.J., Long, B.J., Sallis, J.F., Wooten, W.J., Pratt, M and Patrick, K (1996). A controlled trial of physical counseling to promote the adoption of physical activity. **Preventative Medicine**. Vol. 25, pp. 225-233.

Calfas, K.J., Sallis, J.F., Oldenburg, B and French, M. (1997) Mediators of change in physical activity following an intervention in primary care. PACE. **Preventative Medicine**. Vol. 26, pp. 297-304.

Calnan, M., and Williams, S (1993) Coronary heart disease prevention: the role of the general practitioner. **Family Practice**. Vol. 10, pp. 137-151.

Campbell, M.J., Browne, D and Waters, W.E. (1985) Can general practitioners influence exercise habits? **British Medical Journal**. Vol. 290.pp.1044-1046.

Caplan, G., Robinson, E.A.R., French, J.R.P., Caldwell, J.R., and Shinn, M. (1976). Adhering to Medical Regimens. **Institute for Social Research**. Ann Arbor, MI.

Carroll, R., Ali, N and Azam, N. (2002) Promoting physical activity in South Asian Muslim Women through 'exercise on prescription'. **Health Technology Assessment,** Vol. 6, No.8.

Casebeer, A.L and Verhoef, M.J. (1997). Combining Qualitative and Quantitative Research Methods: Considering the Possibilities for Enhancing the study of Chronic Diseases. **Chronic Diseases in Canada**. Vol. 18, No. 3, pp. 130-135.

Census 2001, **Office of National Statistics** www.neighbourhood.statistics.gov.uk

Chapman, T. (1996) **1996 Directory of GP-referred exercise schemes in England.** Chichester: Chichester Institute of Higher Education.

Charlton, G and Barrow, C (2002) Coping and self-help group membership in Parkinson's Disease: an exploratory qualitative study. **Health and Social Care in the Community**. Vol. 10, No. 6, pp. 472-478.

Charlton, J., Patrick, D. and Peach, H. (1983) Use of multivariate measures of disability in health surveys. **Journal of Epidemiology and Community Health**. Vol. 37, pp. 296-304.

Chelimsky, E. (1997) Thoughts for a new Evaluation Society. **Evaluation**. Vol. 3, No. 1, pp. 97-118.

Chinn, D.J., White, M., Harland, J., Drinkwater, C and Raybould, S. (1999). Barriers to physical activity and socio-economic position: implications for health promotion. **Journal of Epidemiology and Community Health**. Vol. 53, pp. 191-192.

Clegg AJ, Colquitt J, Sidhu MK, Royle P, Loveman E and Walker A (2002). The clinical effectiveness and cost-effectiveness of surgery for people with morbid obesity: a systematic review and economic evaluation. **Health Technology Assessment**. Vol.6, No. 12.

Cohen, S and McKay, G (1984) Social Support, stress and the buffering hypothesis: a theoretical analysis. In; Baum, A., Singer, J.E. and Taylor, S.E. (Eds) (1984). **Handbook of Psychology and Health**. Hillside, N.J., Lawrence, Erlbaum, pp. 253-267.

Cohen, S., Doyle, W.J., Skoner, D.P., Rabin, B.S. and Gwaltney, J. M. (1997) Social ties and susceptibility to the common cold. **Journal of the American Medical Association**. Vol. 277. pp. 1940-1944.

Cohen, S., Underwood, L.G. and Gottlieb, B.H. (Eds.) (2000) **Social Support Measurement and Intervention. A guide for Social Scientists.** University Press: Oxford.

Cooper, H., Arber, S., Fee, L and Ginn, J (1999). The Influence of Social Support and Social Capital on Health. A review and analysis of British Data. **Health Education Authority.** London.

Coppotelli, H.C., and Orleans, C.T. (1985) Spouse support for smoking cessation maintenance by women. **Journal of Consulting and Clinical Psychology**. Vol. 53, pp. 455-460.

Corner, J. (1991) In search of more complex answers to research questions: qualitative versus quantitative research methods: is there a way forward? **Journal of Advanced Nursing.** Vol. 16, pp. 718-727.

Craft, L.L., & Landers, D.M. (1998) The effect of exercise on clinical depression and depression resulting from mental illness: a meta analysis. **Journal of Sport and Exercise Psychology**. Vol. 20, pp. 339-357.

Crone-Grant, D. M. and Smith, R. A. (1998). Exercise Adherence: A Qualitative Perspective. **Journal of Sport Sciences**, 16 (1): 75.

Crone, D.M and Smith, R.A. (1999) Broadening horizons: A qualitative enquiry into the experience of patients on an exercise prescription scheme. **Conference Communications.**

Crone-Grant, D. and Smith, R. A. (2001) Exercise Referral Schemes in Public and Private Leisure - A Qualitative Investigation. **Journal of Sport Sciences**, Vol. 19, No. 1, pp. 19.

Crone, D., Johnston, L., and Grant, T (2004) Maintaining Quality in Exercise referral Schemes: A case study of professional practice. **Primary Health Care Research and Development**. Vol. 5, pp. 96-103.

Crone, D., Smith, A and Gough, B (2005) 'I feel totally at one, totally alive and happy': a psycho-social explanation of the physical activity and mental health relationship. **Health Education Research**. Vol. 20, no. 5, pp.600-611.

Dalal, H., Evans, P.H. and Campbell, J.L. (2004) Recent developments in secondary prevention and cardiac rehabilitation after acute myocardial infarction. **British Medical Journal**. Vol. 328, pp. 693-697.

Daly, J., McDonalt, I. And Willis, E (1992) **Researching health care: designs, dilemmas, disciplines**. Routledge: London.

Damush, T.M., Stewart, A.L., Mills, K.M., King, A.C and Ritter, P.L. (1999) Prevalence correlates of physician recommendations to exercise among older adults. **Journal of Gerontology Annuls of Biological Science and Medical Science**. Vol. 54.

Darwin, C (1952) **The origin of the species: the decent of man**. Encyclopedia Britannica: Chicago.

David, A.K. and Boldt, J.E. (1980) A study of preventative health attitudes and behaviours in a family practice setting. **Journal of Family Practice**. Vol. 11, pp. 77-84.

Deforche, B (2000) Differences in psychosocial determinants of physical activity in older adults participating in organized versus non-organised activities. **Journal of Sports Medicine**. Vol. 40, No, 4, pp. 362-372.

Department of Health (1991) **The Health of the Nation; a strategy for health in England**. London: HMSO.

Department of Health (1996) **Strategy Statement on Physical Activity**. Department of Health: London.

Department of Health (1999a) **Saving Lives: Our Healthier Nation.** HMSO: London.

Department of Health (1999b) **Health Survey for England, 1998**. Department of Health: London.

Department of Health (2000a). **National Service Framework for Coronary Heart Disease.** London

Department of Health (2000b). **Health Survey for England 1998**. Stationary Office: London.

Department of Health (2001a) **Exercise Referral Schemes: A National Quality Assurance Framework**. London.

Department of Health (2001b). **National Service Framework for Diabetes Standards**. London

Department of Health (2001c). **National Service Framework for Older People.** London

Department of Health (2002) **Annual Report of the Chief Medical Officer.** London: DOH.

Department of Health (2004a) **At least five a week: Evidence on the impact of physical activity and its relationship to health**. London.

Department of Health (2004b) **Local Exercise Action Plans** (LEAP). http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/HealthyLiving/LocalExerciseActionPilots/LocalExerciseActionPilotsGeneralArticle/fs/en?CONTENT_ID=4075428&chk=sjIA9I

Department of Health (2005) **Choosing Activity: A physical activity action plan.** London.

Department of Health and Human Services (1996) **Physical activity and health: a report of the US Surgeon General**. National Centres for Disease Control, Atlanta, Georgia.

Denzin, N. (1970) **The research act. 1st Edition.** Prentice Hall; Englewood Cliffs:NJ.

Denzin, N.K, and Lincoln, Y.S (eds) (1994) **Handbook of qualitative research**. Sage Publications: London.

Diabetes Prevention Programme Research Group (2002) Reduction in the incidence of type 2 Diabetes with lifestyle intervention or metformin. **New England Journal of Medicine**. Vol. 346, pp. 393-403.

Dickens, C.M., McGowan, L., Percival, C., Douglas, J., Tomenson, B., Cotter, L., Heagerty, A and Creed, F.H. (2004) Lack of close confidant, but not depression, predicts further cardiac events after myocardial infarction. **Heart**. Vol. 90, pp. 518-522.

Dishman, R.K. Biologic influences on exercise adherence. (1981) **Research Quarterly for Science and Exercise**. Vol. 52, pp. 143-159.

Dishman, R.K. (1982) Compliance/adherence in health related exercise. **Health Psychology**. Vol. 1, pp. 237-267.

Dishman, R.K., Sallis, J.F., Orenstein, D.R (1985) The determinants of physical activity and exercise. **Public Health Reporter**. Vol. 100, pp. 158-172.

Dishman, R. K (1986) Exercise Adherence. In Morgan, W. P & Goldston, S.N (eds.) (1986) **Exercise and Mental Health**. (pp. 57-83). Hemispher: Washington DC.

Dishman, R.K. (1987) Exercise Adherence and Habitual Physical Activity. In W.P. Morgan and S.E. Morgan (eds). **Exercise and Mental Health**. (p. 57-83) Washington: Hemispere.

Dishman, R.K. (ed) (1988) **Exercise Adherence. It's impact on Public Health.** Human Kinetics Books. Champaign, Ill.

Dishman, R.K. (ed) (1994) **Advances in Exercise Adherence.** Human Kinetics Books. Champaign, Ill

Dishman, R.K & Buckworth, J. (1997) Adherence to Physical Activity. In W.P. Morgan (ed). **Physical Activity and Mental Health.** (p. 63-80) Washington DC: Taylor and Francis.

Dowse, G.K., Gareeboo, H., Alberti, K. G. M.M., Zimmet, P., Tuomilehto, J.,Purran, A., Fareed, D., Chitson, P., Collins, V.R., and Hemraj, F. (1995) Changes in Population Cholesterol Concentrations and other Cardiovascular Risk Factors Levels after Five years of the Non-communicable Disease Intervention Programme in Mauritius. **British Medical Journal**. Vol. 311, pp. 1255-1259.

Dr Foster Limited (2003) **Obesity Management in the UK.**

Dugdill, L, Graham, R.C and McNair, F. (2005) Exercise Referral: the Public Health Panacea for Physical Activity Promotion? A critical perspective of exercise referral programmes; their development and evaluation. **Ergonomics**. In press.

Durkheim, E. (1897/1952) **Suicide: A Study in Sociology**. Routledge Kegan Paul: London.

Eaton, S.B., Shostak, M., and Konner M (1988). **The Palaeolithic Prescription; a programme of diet and exercise and a design for living**. Harper and Row: New York

Eden, K.B., Orleans, T., Mulrow, C.D., Pender, N.J., Teutsch, S.M. (1999) Does counseling by Clinicians Improve Physical Activity? A summary of the evidence for the U.S. Preventative Services Task Force. **Annals of Internal Medicine**. Vol. 137, No. 3, pp. 208-215.

Edelbrock, D., Buys, L.R., Waite, L.M., Grayson, D.A., Broe, G.A. and Creasey, H. (2001). Characteristics of Social Support in a community-Living Sample of Older People: The Sydney Older Persons Study. **Australasian Journal on Ageing**. Vol. 20, No. 4, Dec, pp. 173-178.

Elliot, M (2001) Gender differences and causes of Depression. **Women and Health**. Vol. 33, No. 3-4, pp. 163-177.

Elwood, M. (1998) ***Critical Appraisal of Epidemiological* Studies and Clinical Trials. Second Edition**. Oxford University Press. Oxford. UK.

Encouraging walking: advice to local authorities (2000). **Department of Transport, Environment and the Regions (DETR)** http://www.dft.gov.uk/stellent/groups/dft_susttravel/documents/page/dft_susttravel_504172.pdf

European Commission (1996) **Promotion of health-enhancing physical activity. Development of a European strategy, network and action programme**. Tampere, UKK Institieu.

European Health Report (2002) **WHO Regional Publications**, European Series, No. 97. WHO: Copenhagen.

Eyler, A.A., Brownson, R.C., Donatelle, R.J., King, A.C., Brown, D., and Sallis, J.F (1999) Physical activity social support and middle-and older-aged minority women; results from a US survey. **Social Science and Medicine**. Sept. Vol. 49, No. 6, pp. 781-789.

Fentem, P. and Walker, A. (1994) Setting targets for England: challenging, measurable and achievable. In: **Health Education Authority. Moving on. A report of the Health education Authority symposium to agree health education messages for promoting physical activity in England**. Pp.58-76. Health Education Authority: London.

Fielder, H., Shorney, S. & Wright, D. (1995). Lessons from a pilot study on prescribing exercise. **Health Education Journal**. Vol. 54, pp.445-452.

Finch, H (1997). **Physical Activity 'at our age'. Qualitative research among people over the age of 50**. Health Education Authority: London.

Foster, C (2000) **Guidelines for health-enhancing physical activity promotion programmes.** British Heart Foundation Health Promotion Research Group. Oxford

Fox, K.R (1990) The Physical Self-Perception Profile manual. DeKalb, IL: Office of Health Promotion, Northern Illinois University.

Fox, K., Biddle, S, Edmunds, L., Bowler, I and Killoran, A. (1997) Physical Activity Promotion through primary health care in England. **British Journal of General Practice**. Vol. 47, pp. 367-369.

Frank, E and Kunovich-Frieze, T. (1995) Physicians' prevention counselling behaviours; current status and future directions. **Preventative Medicine**. Vol. 24, pp.543-545.

Franke, D.L., Leistikow, B. N., Offord, K.P., Schmidt, L and Hurt, R.D (1995) Physician referrals for Smoking Cessation: Outcome in those who show and Don't show. **Preventative Medicine**. March 1995, pp. 194-200.

Fuhrer, R., & Stansfield, S.A. (2002) How Gender Affects Patterns of Social Relations and Their Impact on Health: A Comparison of One of Multiple Sources of Support from "Close Persons". **Social Science and Medicine**. Vol. 54, No. 5, Mar, pp. 811-825.

Funch, D.P., & Marshall, J. (1983). The role of stress, social support, and age in survival from breast cancer. **Journal of Psychosomatic Research**. Vol. 27, pp. 143-149.

Game Plan: A strategy for delivering Governments Sport and Physical Activity Objectives (2002). **Department of Culture, Sport and Media**. Strategy Unit. Crown Publications: London.

Gidlow, C., Johnston, L and Grant, T (2005) Attendance of Exercise Referral Schemes in the UK: a systematic review. **Health Education Journal**. Vol. 64, no. 2., pp. 168-186.

Godin, G., and Shephard, R.J. (1985) A simple method to assess exercise behaviour in the community. **Canadian Journal of Applied Sports Science**. Vol.10, pp. 141-146.

Godin, G., Jobin, J and Boulin, H. (1986). Assessment of leisure time exercise behaviour by self-report: a concurrent validity study. **Canadian Journal of Public Health**. Vol. 77, pp. 359-362.

Gogineni, A., Stein, M.D., and Friedmann, P.D. (2001). Social Relationships and Intravenous Drug use among Methadone Maintenance Patients. **Drug and Alcohol Dependence**. Vol. 64, No. 1, Sept., pp. 47-53.

Goldberg, D.P. (1972) **The Detection of Psychiatric Illness by Questionnaire.** Maudsley Monograph No. 21. Oxford University Press. Oxford.

Goldberg, D.P. (1978) **Manual of the General Health Questionnaire**. NFER Nelson: Windsor.

Goldberg, D.P and Huxley, P (1980) **Mental Illness in the community: The Pathway to Psychiatric Care**. Tavistock: London.

Goss, J.D and Leinbach, T.R. (1996) Focus groups as alternative research practice. **Area 28**, Vol. 2, pp. 115-123.

Graham, R.C., Dugdill, L. and Cable, T. (2004) Health Practitioner Perspectives in Exercise Referral: Implications for the referral process. **Ergonomics.** In press.

Graham-Clarke, P and Oldenburg, B. (1994). The effectiveness of a general-practice-based physical activity intervention on patient physical activity status. **Behaviour Change**. Vol. 11, No. 3, pp. 132-144.

Green, L.W (1979) How to Evaluate Health promotion. **Hospitals**.1 October, pp. 106-108.

Greenhalgh, T and Taylor, R (1997) How to read a paper: Papers that go beyond numbers (qualitative research). **British Medical Journal**, Vol. 315, pp. 740-743.

Greenwood., D.C., Muir, K.R., Packham, C.J and Madeley, R.J. (1996) Coronary heart disease: a review of the role of psychosocial stress and social support. **Journal of Public Health Medicine**. Vol. 18, No. 2, pp. 221-231.

Grunstein, R.R., Stenlof, K, Hedner, J., Sjostrom, L. (1995) Impact of obstructive apnoea and sleepiness on metabolic and cardiovascular disease and death in the Swedish obese subjects (SOS) study. **International Journal of Obesity**. Vol.19, pp. 410-418.

Ha, T.T.K. and Lean, M.E.J. (1998) Guidelines for the nutritional management of patients with diabetes. **European Journal of Clinical Nutrition**. Vol. 53, pp. 467-481.

Haas, S.M. (2002) Social Support as Relationship Maintenance in Gay May couples Coping with HIV or AIDS. **Journal of Social and Personal Relationships**. Vol. 19, No.1, Feb, pp. 87-111.

Hagstromer, M., Ekelund, U., Yngve, A and Sjostrom, M. (2002) A validity study of IPAQ versus two indirect and two direct measures of physical activity. **Medicine and Science in Sport and Exercise.** Vol. 33 (presented at the ACSM annual meeting, June 2-4, St Louise, MO, USA).

Hancock, D (2004) Cooperative Learning and Peer Orientation Effects on Motivation and Achievement. **Journal of Educational Research**. Vol. 97, pp. 159-168.

Harrison, A.R., Roberts, C and Elton, P.J. (2004) Does primary care referral to an exercise programme increase physical activity 1 year later? A randomised controlled trial. **Journal of Public Health**. Vol. 27, No. 1., pp. 25-32.

Harrison, R.A., McNair, F., and Dugdill, L (2005) Access to exercise referral schemes- a population based analysis. **Journal of Public Health**.

Harsha, D.M., Saywell, R.M., Thygerson, S. (1996). Physical factors affecting patient willingness to comply with exercise recommendations. **Clinical Journal of Sports Medicine**. Vol. 6, pp.112-118.

Halbert, J.A., Silagy, C.A., Finucan, P.M., Withers, R.T. and Hamdorf, P.A. (2000) Physical activity and cardiovascular risk factors: effect of advice from an exercise specialist in Australian General Practice. **Medical Journal of Australia**. Vol. 173, No. 2, pp/ 84-87.

Hardcastle, S and Taylor, A. (2001) Looking for More Than Weight Loss and Fitness Gain: Psychocosial Dimensions Among Older Women in a Primary-Care Exercise-referral scheme. **Journal of Ageing and Physical Activity**. Vol. 9, pp. 313-328.

Hardcastle, S and Taylor, A.H (2005) Finding an exercise *identity in an older body*: "It's redefining yourself and working out who you are". **Psychology of Sport & Exercise**. Vol. 6, pp. 173-188.

Harding, G. and Gantley, M. (1998) Qualitative methods: beyond the cookbook. **Family Practice**. Vol. 15, pp. 76-79.

Harland, J., White, M., Drinkwater, C., Chinn, D., Farr, L & Howel, D. (1999). The Newcastle Exercise project: a randomized controlled trial of methods to promote physical activity in primary care. **British Medical Journal**, Vol.19, pp. 828-832.

Harsha, D.M., Saywell, R.M., Thygerson, S. (1996). Physical factors affecting patient willingness to comply with exercise recommendations. **Clinical Journal of Sports Medicine**. Vol. 6, pp.112-118.

Hart, E and Bond, M. (1995) **Action Research for Health and Social Care**. Open University Press, Buckingham, UK

Harvey, J.H., and Wenzel, A. (2002). HIV, AIDS and Close Relationships. **Journal of Social and Personal Relationships**. Vol. 19, No. 1, Feb, pp. 135-142.

Haskell, W.L. (1994). Health consequences of physical activity: understanding and challenges regarding does response. **Medicine and Science in Sport and Exercise**. Vol. 26, pp. 649-660.

Health Education Authority and Sports Council. (1992) **Allied Dunbar National Fitness Survey**. London. Health Education Authority.

Health Education Authority (1994) Health Screening; The facts. **Healthlines**, April, 8.

Health Education Authority (1996) **Promoting physical activity in primary healthcare.** Health Education Authority: London.

Health Education Authority (1999) **Physical Activity and Inequalities. A briefing paper.** Health Education Authority: London.

Health Education Authority (1996-2000) **Active for Life.** Health Education Authority, London.

Health Survey for England 1998 (1999). **Prevalence of morbid obesity, obesity and overweight by sex and social class, 1998, England.**

Henderson, K.A., and Ainsworth, B.E. (2001). Social Support, Constraints, and time for Physical Activity Involvement: Perspectives of American Indian Women from the

Cultural Activity Participation Study. **Contemporary Perspectives in Family Research.** Vol. 3, pp. 383-402.

Henderson L., (2002) **National Diet and Nutrition Survey: adults aged 19 to 64 years (Vol. 1)** National Food Standards agency. The Stationary Office: London.

Herxheimer, A. (2001) Helping Patients Take Responsibility for their own health. **Annals of Internal Medicine.** Vol. 135, No. 1, pp. 51-52.

Hill, J.O and Peters, J.C. (1998) Environmental contributors to the obesity epidemic. **Science.** Vol. 2809, pp. 1371-1374.

Hillsdon, M., Foster, C., Naidoo, B and Crombie, H. (2004) **The Effectiveness of public health interventions for increasing physical activity among adults: a review of reviews. Evidence Briefing**. Health Development Agency.

House, J.S., Landis, K.R., & Umberston, D. (1988) Social relationships and health. **Science**, Vol. 241, pp. 540-545.

House of Commons Health Committee (2003-04). **Obesity. Third Report of Session 2003-04. Volume 1.** The Stationary Office: London.

Hubert, H.B., Feinleib, M., McNamara, P.M. and Castelli, W.P. (1983) Obesity as an independent risk factor for cardiovascular disease: a 26-year follow-up of participants in the Framingham heart study. **Circulation**. Vol. 67, pp. 968-977.

Hunt, P & Hillsdon, M. (1996) **Changing Eating and Exercise Behaviour. A handbook for Professionals**. Blackwell Science. Oxford.

Inelmen, E.M., Toffaneollo, E.D., Enzi, G., Gasparini, G., Miotto, F., Sergi, G. and Busetto, L. (2004) Predictors of drop-out in overweight and obese outpatients. **International Journal of Obesity**. Vol. 29, p. 122-128.

Ingledew, D.K., Markalnd, D and Medley, A.R. (1998) Exercise motives and stages of change. **Journal of Health Psychology**. Vol.3, pp. 477-489.

Jackson, L., Leclerc, J., Erskine, Y and Linden, W (2005) Getting the most out of cardiac rehabilitations: a review of referral and adherence predictors. **Heart**. Vol. 91, pp. 10-14.

Jegathesan, M (2002) **Ministerial round table on diet, Physical activity and Health: Regional Committee for the Western pacific. Fifty third session**. Kyoto, Japan. 16-20 September. WHO

Jette, M., Sidney, K, & Blumchen, G. (1990). Metabolic Equivalents (METS) in Exercise Testing, Exercise Prescription, and evaluation of functional capacity. **Clinical Cardiology**. Vol. 13, pp. 555-565.

Johnston, L., Warwick, J., De Ste Croix, M. Crone, D. and Sidford, A. (2005). The nature of all 'inappropriate referrals' made to a countywide physical activity referral scheme: Implications for Practice. ***Health Education Journal***, 64, No.1, pp. 58-69.

Jung, J. (1988) Social Support providers: Why do they help? **Basic and Applied Psychology**. Vol. 9, pp. 231-240.

Jung, R.T. (1997) Obesity as a disease. **British Medical Bulletin**. Vol. 53, pp. 308-321.

Kaplan, G.A., Salonen, J.T., Cohen, R.D., Brand, R.J., Syme, S.L. & Puska, P. (1988). Social connections and mortality from all causes and from cardiovascular disease: Prospective evidence from eastern Finland. **American Journal of Epidemiology**. Vol. 128, pp. 370-380.

Keen, J., and Packwood, T. (1995) Qualitative research: case study evaluation. **British Medical Journal**. Vol. 311, pp. 444-446.

Kemmis, S, and McTaggart, R (1988). **The Action Research Planner**. Deakin University Press. Geelong, Victoria, Australia.

Keys, A. (1970) Coronary Heart Disease in Seven Countries. **American Heart Association Monograph No. 29**, New York.

King, A.C., Taylor, C.B., Haskell, W.L, and DeBusk, R.F. (1988) Strategies for increasing early adherence to and long-term maintenance of home-based exercise training in healthy middle-aged men and women. **American Journal of Cardiology**. Vol. 61, pp. 628-632.

King, A.C., Haskell, W.L., Barr Taylor, C., Kraemer, H.C. and DeBusk, R.F. (1991) Group vs. home based exercise training in healthy older men and women. **Journal of American Medicine**. Vol. 266, p. 1535-1542.

King, A.C., Blair, S.N., Bild, D.E., Dishman, R.K., Dubbert, P.M., Marcus, B.H., Oldridge, N.B., Paffenbarger, R.S, Jr., Powell, K.E, and Yeager, K.K. (1992) Determinants of physical activity and interventions in adults. **Medicine and Science in Sport and Exercise**. 24 (6) S221- S.

Kitzinger, J (1994) The methodology of focus groups: the importance of interaction between research participants. **Sociology of Health**. Vol. 16, No. 1, pp. 103-121.

Kitzinger, J (1995) Introducing Focus Groups. **British Medical Journal**. Vol. 311, pp. 299-302.

Kopelman, P.G. (1988) Neuroendocrine function in obesity. **Clinical Endocrinology**. Vol. 28, p. 675-689.

Kopelman, P.G. (2000) Obesity as a medical problem. **Nature**. Vol. 404, pp. 635-643.

Krueger, R.A., and King, J.A (1998) **Involving Community Members in Focus Groups**. SAGE Publications Ltd: London

Kreuter, M.W., Scharff, D.C., Brennan, L.K and Lukwago, S.N. (1997) Physician recommendations for diet and physical activity. **Preventative Medicine.** Vol. 26, pp. 825-833.

Lamb, S.E., Bartlett, H.P., Ashley, a and Bird, W (2002) Can lay-led walking programmes increase physical activity in middle aged adults? A randomised controlled trial. **Journal of Epidemiology and Community Health.** Vol. 56, pp. 246-252.

Landale, N.S. and Orpesa, R.X. (2001) Migration, Social Support and Perinatial Health: An Origin-Destination Analysis of Puerto Rican Women. **Journal of Health and Social Behaviour.** Vol. 42, No. 2, June, pp. 166-183.

Leslee, L., DuPertuis, L.L., Aldwin, C.M., and Bosse, R. (2001) Does the Source of Support Matter for Different Health Outcomes? Findings from the Normative Aging Study. **Journal of Aging and Health**. Vol. 13, No. 4, Nov, pp. 494-510

Lewis, C.E., Clancy, C., Leake, B., and Schwartz, J.S. (1991) The counselling practices of internists. **Annals of Medicine**. Vol. 114, p. 54-58.

Lewis, B.S., and Lynch, W.D. (1993) The Effect of Physician advice on Exercise Behaviour. **Preventative Medicine**. Vol. 22, pp. 110-121.

Lewis, D.K., Robinson, J and Wilkinson, E (2003) Factors involved in deciding to start preventative treatment: qualitative study of clinicians and lay people's attitudes. **British Medical Journal**. Vol. 327, pp.841-846.

Lichenstein, E. (1982) The smoking problem: A behavioural perspective. **Journal of Consulting and Clinical Psychology**. Vol. 50, pp. 804-819.

Lincoln, Y and Guba, E. (1986) Research, evaluation and policy analysis: heuristics and disciplined inquiry. **Policy Studies Review**. Vol. 5, No. 3, pp. 546-565.

Lobstein T.J., James, WPT., and Cole, T.J. (2003) Increasing levels of excess weight in children in England. **International Journal of Obesity.** Vol. 27, p. 1136-1138.

Lord, JC & Green, F. (1995). Exercise on prescription: does it work? **Health Education Journal**. Vol.54, pp. 453-464.

MacAuley, D (ed.) (1999). **Benefits and Hazards of Exercise.** British Medical Journal. BMJ Books: London.

MacDougall, C., and Fudge, E. (2001) Planning and Recruiting the Sample for Focus Groups and In-Depth Interviews. **Qualitative Health Research**. Vol. 11, No. 1, pp. 117-126.

Marcus, B.H and Owen, N (1992a) Motivational Readiness, self-efficacy and decision making for exercise. **Journal of Applied Social Psychology**. Vol. 22, pp. 3-16.

Marcus, B.H., Banspach, S.W., Lefebvre, R.C., Rossi, J.S., Carelton, R.A., and Abrams, D.B. (1992b). Using the Stages of Change Model to increase the adoption of physical activity among community participants. **American Journal of Health Promotion**. Vol. 6, pp. 424-429.

Marcus, B.H., and Simkin, L.R. (1994). The Transtheoretical Model: Applications to Exercise Behaviour. **Medicine and Science in Sport and Exercise**. Vol. 26, pp. 1400-1404.

Marcus, B.H., Goldtein, M.G., Jette, A., Simkin-Silverman, L., Pinot, B.M., Milan, F., Washburn, R., Smith, K., Rakowski, W and Dube, C.E., (1997) Training physicians to conduct physical activity counseling. **Preventative Medicine**. Vol. 26, pp. 382-388.

Marintsend, E.W. and Morgan, W.P. (1997) Antidepressent effects of Physical Activity. In W.P.Morgan (Ed). **Physical Activity and Mental Health**. Washington, DC: Taylor & Francis, pp. 93-106.

Martin, C and Woolf-May, K (1999) The retrospective evaluation of a general exercise prescription programme. **Journal of Human Nutrition and Dietetics**. Vol. 12. Suppl.1, pp. 32-42.

Matthews, M.W. and Kesner, J (2003) Children learning with peers: the literacy competence within small-group literacy events. **Reading Research Quarterly**. Vol. 38, pp. 208-234.

Mays, N and Pope, C (2000) Qualitative research in health care. Assessing quality in qualitative research. **British Medical Journal**. Vol. 320, pp. 50-52.

McBride, C.M., Curry, S.J., Grothaus, L.C., Nelson, J.C., Lando, H and Pirie, P.L (1998) Partner smoking status and pregnant smoker's perceptions of support and likelihood of smoking cessation. **Health Psychology**. Vol. 17, No.1, pp. 63-69.

McLaughlin, J., Horwitz, A.V., and White, H.R. (2002) The differential importance of friend, Relative and Partner Relationships for the Mental Health of Young Adults. **Advances in Medical Sociology**. Vol. 8, pp. 223-246.

McKay, H.A., McDonald, H., reed, K.E. and Khan, K.M. (2003) Exercise interventions to health: time to focus on dimensions, delivery, and dollars. **British Journal of Sports Medicine**. Vol. 37, p. 98-99.

McKenna, J., Naylor, P.J. and McDowell, N. (1998) Barriers to physical activity promotion by general practitioners and practice nurses. **British Journal of Sports Medicine**. Vol. 32, No. 3, pp. 242-247.

Medical Defence Union (2001) www.the-mdu.com.

Mermelstein, R.J and Lichtenstein, E (1983) Slips verses relapses in smoking cessation: A situational analysis. **Paper presented at meeting of the Western Psychological Association, San Francisco.**

Merryfield, C. (2004) Dietary Intervention of Weight Management and Type 2 Diabetes. **Complete Nutrition**. Vol. 4, No.1, pp. 16-19.

Miles, M and Huberman, A. (1994) **Qualitative Data Analysis: an Expanded Sourcebook**. Sage Publications: Thousand Oaks.

Miller, R.D. and Rollnick, S (1991) **Motivational Interviewing. Preparing People to Change Addictive Behaviour.** The Guilford Press: New York.

Miller, D.J., Freedson, P.S. and Kilne, G.M. (1994). Comparisons of activity levels using the Caltrac accelerometer and five questionnaires. **Medicine and Science in Sport and Exercise.** Vol. 26, pp. 376-382.

Miilunpalo, S. (1991) Exercise guidance in Primary Health Care. In Oja, P and Telama, R (eds.) **Sport for All**. Pp. 185-192. Elsevier: Amsterdam

MMWR, (1999) Physician advice and individual behaviours about cardiovascular disease risk reduction- seven states and Puerto Rico, 1997. **Morbidity and Mortality Weekly Report**. Vol. 48, pp. 74-77.

Mohr, C.D., Averna, S., Kenny, D.A. and Del-Boca, F.K (2001) "Getting By (or Getting High) with a Little Help from my Friends": An Examination of Adult Alcoholics' Friendships. **Journal of Studies on Alcohol.** Vol. 62, No. 5, Sept, pp. 637-645.

Monitoring Report 1997-2000 (2001) GP Exercise Referral Scheme. Wigan Health and Leisure and Cultural Services.

Moore, H., Summerbell, C.D., Greenwood, D.C, Tovey, P., Griffiths, J., Henderson, M., Hesketh, K, Woolgar, S and Adamson, A. (2003) Improving management of obesity in primary care: cluster randomised trial. **British Medical Journal**. Vol. 327, pp. 1085-1090.

Morgan, W.P. and O'Connor, P.J. (1988) Exercise and Mental health. In R.K. Dishman (Ed) **Exercise Adherence: it's impact on public health.** Champaign, IL: Human Kinetics. Pp. 91-121.

Mulvihill, C and Quigley, R. (2003) The management of obesity and overweight: an analysis of reviews of diet, physical activity and behavioural approaches. **Health Development Agency**: London.

Munro, J. (1997) A Randomised controlled trial of exercise in over-65-years-olds: experience from the first year. In Huber, Dr G (ed.), **Proceedings of the 4th International Conference on Physical Activity, Ageing and Sports**: 246-247. Hamburg: Health Promotion Publications

Murphy, E., Dingwall, R., Greatbatch, D., Parker, S and Watson, P. (1998) Qualitative research methods in health technology assessment: a review of the literature. **Health Technology Assessment**. Vol. 2, No.16.

National Audit Office (2001) **Tackling Obesity in England**. The Stationary Office: London.

National Health and Medical Research Council (1997) **Acting on Australia's weight: A Strategy for the prevention of overweight and obesity**. Canberra: Australian Governments Publishing Service.

NIH (National Heart, Lung and Blood Institute) (1998) **Clinical guidelines on the identification, evaluation and treatment of overweight and obesity in adults. The evidence report**. National Institutes of Health: Bethesda. Maryland.

National Public Health Institute, Finland (2001) **Health behaviour and health among Finnish adult population, spring 2001**. Helsinki, Julkaisija Utgivare.

National Travel Survey (2002) **Department for Transport.** July 2004

Nies, A., Vollman, M., and Cook, T (1998) Facilitators, barriers, and strategies for exercise in European women in the community. **Public Health Nursing**. Vol. 15, No. 4, p. 263-272.

Noel, P.H., Pugh, J.A (2002) Management of overweight and obese adults. **British Medical Journal**. Vol. 325; p.757-761.

Northwest Public Health Observatory http://www.nwph.net

Obesity Resource Information Centre (1997) **Physical Activity and Obesity**. Bristol: ORIC.

Ockene, J.K. (1984). Toward a smoke-free society. **American journal of Public Health**. Vol. 74, pp. 1198-1200.

Office of Population Censuses and Surveys (1995) **The health Survey for England 1993**. HMSO: London.

Oldridge, N.B. (1982) Compliance and exercise in primary and secondary prevention of coronary heart disease. **Preventative Medicine**. Vol. 11, pp. 56-70.

Oldridge, N.B. and Jones, N.L. (1983). Improving patient compliance in cardiac rehabilitation. Effects of written agreement and self-monitoring. **Journal of Cardiopulmonary Rehabilitation**. Vol. 3, pp. 257-262.

Oldridge, N.B. and Spencer, J. (1985) Exercise habits and perceptions before and after graduation or dropout from supervised cardiac exercise rehabilitation. **Journal of Cardiopulmonary Rehabilitation**. Vol. 5, pp. 313-319.

Paffenbarger, R.S and Olsen, E (1996) **Lifefit. An Effective Program for Optimal Health and a Longer Life**. Human Kinetics, UK.

Paisey, R.B., Frost, J., Harvey, P (2002) Five-year results of a prospective VLCD or conventional weight loss programme in type 2 diabetes. **Journal of Human Nutrition and Dietetics**. Vol. 15, No. 2, pp. 121-127.

Park, R., & Burgess, E (Eds.) (1926). **The City**. Chicago: University of Chicago Press.

Parker, A (1999). **Everything you ever wanted to know about Focus Groups.** Personal communication.

Pate, R.R., Pratt, M., Blair, S.N. (1995) Physical activity and public health: a recommendation from the Centre for Disease Control and Prevention and the American College of Sports Medicine. **JAMA.** Vol. 273, pp. 402-407.

Plante, T.G. (1993) Aerobic exercise in prevention and treatment of psychopathology. In P. Seraganian (Ed), **Exercise psychology: the influence of physical exercise on psychological processes**. New York: Wiley. Pp. 358-379.

Pollock, M.L. (1988) Prescribing exercise for fitness and adherence. In: Dishman, R.K. (Ed) **Exercise Adherence: It's impact on Public Health**. Champaign, IL: Human Kinetics, pp. 259-277.

Pope, C and Mays, N (1995) Qualitative Research: Reaching the parts other methods cannot reach: an introduction to qualitative methods in health and health services research. **British Medical Journal**. Vol. 311, pp. 42-45.

Popper, K.R (1980). **The logic of scientific discovery**. Routledge: New York.

Powell, K.E. and Blair, S.N. (1994) The public health burdens of sedentary living habits: Theorectical but realistic estimates. **Medicine and Science in Sport and Exercise**. Vol. 26. pp. 851-856.

Prentice, A.M. and Jebb, S.A (1995) Obesity in Britain: gluttony or sloth? **British Medical Journal**. Vol. 311, pp. 437-439.

Prochaska, J.O & DiClemente, C.C. (1983) Stages and processes of self change of smoking: toward an integrative model of change. Journal of Consulting and Clinical Psychology. Vol. 51. pp. 390-395.

Prochaska, J. O., Velicer, W. F., DiClemente, C. C., & Fava, J. L. (1988). Measuring processes of change: Applications to the cessation of smoking. **Journal of Consulting and Clinical Psychology**. Vol. 56, pp. 520-528.

Prochaska, J.O (1994) Strong and Weak Principles for progressing from precontemplation to action on the basis of twelve problem behaviours. **Health Psychology**. Vol. 13, pp. 47-51.

Reed. G.R., Velicer, W.F., Prochaska, J.O., Rossi, J.S. and Marcus, B.H, (1997). What Makes a good Staging Algorithm: Examples from Regular Exercise. **The Science of Health Promotion**. Vol. 12, No. 1, pp. 57-66.

Reichardt, C.S., Rallis, S.F. (1994) Qualitative and quantitative inquiries are not incompatible: A call for a new partnership. Pp.85-92. In: Reichardt, C., Rallis, S (eds). The **Qualitative-Quantitative Debate: New Perspectives**. Jossey-Bass. San Fransico: CA..

Reid, C.M., Maher, T. and Jennings, G.L. (2000) Substituting lifestyle management for pharmacological control of blood pressure: a pilot study in Australian general practice. **Blood Pressure.** Vol. 9, No. 56, pp. 567-274.

Riddoch, C., Puig-Ribera, A and Cooper, A. (1998). **Effectiveness of physical activity promotion schemes in primary care. Health Promotion effectiveness reviews**. Health Education Authority. London.

Riddoch, C and McKenna, J (Eds.) **Perspectives in Health and Exercise.** MacMillan: London)

Robertson, M. (1996). Cost in General Practice. **British Medical Journal**. Vol. 313, pp. 1143-1144.

Robison, J and Rogers, M. (1994) Adherence to exercise programmes. **Sports Medicine**. Vol. 17, pp. 39-52.

Ross, C.E and Mirowsky, J (1989) Explaining the social patterns of depression: control and problem solving- or support and talking? **Journal of Health and Social Behaviour**. Vol. 30, pp. 206-219.

Rosser, R., Denford, J. and Heslop, A. (1983) Breathlessness and psychiatric morbidity in chronic bronchitis and emphysema: A Study of psychotherapeutic management. **Psychological Medicine**. Vol. 13, pp. 93- 110.

Royal College of Physicians (RCP) (2004) **Storing up Problems: the medical case for a slimmer nation**. RCP Publications

Rudnicki, S.R., Graham, J.L., Habboushe, D.F., and Ross, R.D (2001) Social Support and Avoidant coping strategies: Correlates of Depressed Mood during Pregnancy in Minority Women. **Women and Health**. Vol. 34, No. 3, pp. 19-34.

Russell, M.A.H., Wilson, C., Taylor, C. and Baker, C (1979) Effect of General Practitioners advice against smoking. **British Medical Journal**. Vol. 2, pp. 223-235.

Rutledge, T., Reis, S.E., Olson, M., Owens, J., Kelsey, S.F., Pepine, C.J., Mankad, S., Rogers, W.J., Bairey Merz, C.N., Sopko, G., Cornell, C.E., Sharaf, B and Matthews, K.A. (2004) Social Networks are associated with lower mortality rates among women with suspected coronary disease: The National Heart, Lung, and Blood Institute-Sponsored Women's Ischemia Syndrome Evaluation Study. **Psychosomatic Medicine**. Vol. 66, pp. 882-888.

Sallis, J.F., Haskell, S.P., Fortmann, S.P. et al. (1986) Predictors of adoption and maintenance of physical activity in a community sample. **Preventative Medicine**. Vol. 15, pp. 331-341.

Sallis, J.F., Grossman, R.M., Pinski, R.B., Patterson, T.L., Nader, P.R. (1987) The Development of Scales to Measure Social Support for diet and Exercise Behaviours. **Preventative Medicine**. Vol. 16, pp. 825-836.

Sallis, J.F., Hovell, M.F, and Hofstetter, C.R. (1992) Predictors of adoption and maintenance of vigorous physical activity in men and women. **Preventative Medicine**. Vol.21, pp. 237-251.

Sarason, I.G., Levine, H.M., Bashman, R.B., and Sarason, B.R. (1983) Assessing social support: The Social Support Questionnaire. **Journal of Pers. Social Psychology**. Vol. 44, pp. 127-139.

Sarkin, J.A., Nichols, J.F., Sallis, J.F., and Calfas, K.J. (2000). Self-report measures and scoring protocols affect prevalence estimates of meeting physical activity guidelines. **Medicine and Science in Sport and Exercise**. Vol. 32, No. 1, pp. 149-156.

Scerpella, T. A., Tuladhar, P. and Kanaley, J.A. (2002). Validation of the Godin-Shephard questionnaire in prepubertal girls. **Medicine and Science in Sport and Exercise.** Vol. 34, No.5, pp. 845-850.

Schachter, S. (1982) Recidivism and self-cure of smoking and obesity. **American Psychologist**. Vol. 37, pp. 436-444.

Schwarzer, R., Dunkel-Schetter., Weiner, B and Woo, G., Expectancies as mediators between recipient characteristics and social support intentions. In Schwarzer, R. (ed) (1992) **Self-Efficacy, Thought Control of Action.** Hemisphere Publishing Corporation: USA.

Scottish Intercollegiate Guidelines Network (SIGN) (2001) **Management of Diabetes: A National Clinical Guideline**. Edinburgh: SIGN Executive.

Seigel, P and Reinstein, A. (2001). An exploratory study of mentor relationships in large CPA firms. **Scandinavian Journal of Management**. Vol. 17, No. 4, pp. 421-436.

Selby, P. and Robertson, B. (1987) Measurement of Quality of Life in patients with Cancer. **Cancer Surveys**. Vol. 6, pp. 521-543.

Selltiz, C., Jahoda, M., Deutsch, M., and Cook, S.W (1962). **Research Methods in Social Relations. 2nd Edition**. Holt, Rinehart & Winston: New York

Shaw, I.F (1999) **Qualitative Evaluation**. Sage Publications: London.

Sims, J., Huang, N., Pietshc, J and Naccarella, L (2004) The Victorian Active Script Programme: promising signs for general practitioners, population health, and the promotion of physical activity. **British Journal of Sports Medicine**. Vol. 38, No. 1, pp. 19-25.

Silverman, D (2001) **Interpreting Qualitative Data**. Sage Publications: London.

Shephard, R.J. (1987) **Physical Activity and Aging. 2nd Edition.** Croom Helm: London.

Shephard, R.J. (2003) Limits to the measurement of habitual physical activity by questionnaires. **British Journal of Sports Medicine**. Vol. 37, pp. 197-206.

Shumaker, S.A. and Brownell, A. (1984). Toward a theory of Social Support: Closing conceptual gaps. **Journal of Social Issues**. Vol. 40, pp. 11-36.

Sjostrom, M (2000) **Assessment and monitoring of HEPA at population level; establishment, reliability and validity of IPAQ a global measure of physical activity.** Proceedings of the 3rd Nordic Health Promotion Research Conference, Outcomes of Health Promotion, No. B7:3, September 7-9, 2000, Tampere, Finland.

Smith, B.J., Bauman, A.E., Bull, F.C., Booth, M.L. and Harris, M.F. (2000) Promoting physical activity in general practice: a controlled trial of written advice and information materials. **British Journal of Sports Medicine**. Vol. 34, No. 4, pp. 262-267

Song, T.S and Ingrma, K. M. (2002). Unsupportive Social Interactions, Availability of Social Support, and Coping: Their relationship to Mood Disturbance among African Americans with HIV. **Journal of Social and Personal Relationships**. Vol. 19, No. 1, Feb, pp. 67-85.

Sonstroem, R.J (1998) Physical self concept: Assessment and externals validity. **Exercise and Sport Science Reviews.** Vol. 26, pp. 133-164.

Springett, J. (2001) Appropriate approaches to the evaluation of Health Promotion. **Critical Public Health**. Vol. 11, No. 2, pp. 139-151

Stampfer, M.J., Maclure, M.K., Colditz, G.A., Manson, J.E., Willett, W.C. (1992) Risk of symptomatic gallstones in women with severe obesity. **American Journal of Clinical Nutrition**. Vol. 55, pp. 652-658.

Stanton W.R and McGee, R (1996) Adolescents' promotion of non-smoking and smoking. **Addiction and Behaviour**. Vol. 21, No. 1, pp. 47-56.

Stathi, A., McKenna, J and Fox, K.F (2003). The experiences of older people participating in exercise referral schemes. **The Journal for the Royal Society for the Promotion of Health.** Vol. 124, No. 1, pp. 18-23.

Steptoe, A., Doherty, S., Rink, E., Kerry, S, Kendrick, T and Hilton, S. (1999) Behavioural counselling in general practice for the promotion of healthy behaviour among adults at increased risk of coronary heart disease. **British Medical Journal. Clinical research edition**. Vol. 319, No. 7215, pp. 943-947; discussion 947-948.

Steptoe, A., Kerry, S., & Rink, E. (2000) Psychosocial predictors of changes in physical activity in overweight sedentary adults following counselling in primary care. **Preventive Medicine**, Vol. 31, no. 2, pp.183-194.

Stevens, W., Hillsdon, M., Thorogood, M and McArdle, D (1998) Cost-effectiveness of a primary care based physical activity intervention in 45-74 year old men and women: a randomised controlled trial. **British Journal of Sports Medicine**. Vol. 32, pp. 236-241.

Stevens, M., Lemmink, K.A.P.M., De Greef, M.H and Rispens, P. (2000). Groningen Active Living Model (GALM): Stimulating Physical Activity in Sedentary Older Adults; First Results. **Preventative Medicine**, Vol. 31, pp. 547-553.

Stringer, E.T (1999) **Action Research. 2nd Edition**. SAGE Publications: London.

Suitor, J and Pillemer, K. (2002). Gender, Social Support, and Experiential Similarity during Chronic Stress: The case of family caregivers. **Advances in Medical Sociology**. Vol. 8, pp. 247-266.

Swinburn, B.A., Walter, L.G., Arroll, B., Tilyard, M.W and Russell, D.G (1998) the Green Prescription Study: a randomised controlled trial of written exercise advice provided by general practitioners. **American Journal of Public Health**. Vol. 88, No. 2, pp. 288-291.

Taylor, A.H. (1996) Evaluating GP exercise referral schemes: findings from a randomised controlled study. Topic Report 6. **Chelsea School Research Centre**, University of Brighton: Brighton

Taylor, R and Kirby, B. (1997). The evidence base for the cost effectiveness of cardiac rehabilitation. **Heart**. Vol. 78, pp.5-6.

Taylor, A., Doust, J. & Webborn, N. (1998). Randomised Controlled Trial to examine the effects of a GP exercise referral programme in Halisham, East Sussex on

modifiable Coronary Heart Disease risk factors. **Journal of Epidemiology and Community Health**. Vol. 52, pp.595-601.

Taylor, A.H & Fox, K (2005) Changes in Physical Self-Perceptions: findings from a randomised controlled study of a GP exercise referral scheme. **Health Psychology**. Vol. 24, pp. 11-21.

The General household survey (1971-2003) Office for National Statistics http://www.esds.ac.uk/government/ghs/

The National Diet and Nutrition Survey (Vol. 4) (2004) The National Food Standards Agency. The Stationary Office: London.

The Writing Group for the Activity Counselling Trial Research Group (2001) Effects of Physical Activity Counselling in Primary Care: The Activity Counselling Trial: A Randomised Controlled Trial. **JAMA.** Vol. 286, pp.677 - 687.

Thoits, P.A. (1986) Social Support as coping assistance. **Journal of Consulting and Clinical Psychology.** Vol. 54, pp. 416-423.

Trend, M., (1979) On the reconciliation of qualitative and quantitative analysis. In: Reichardt, C., Cook, T (eds). Qualitative and quantitative methods in evaluation research. Pp. 68-86. Sage publications; Beverley Hills, CA

Uchino, B.N., Cacioppo, J.T. and Kiecolt-Glaser, J.K (1996) The relationship between social support and physiological processes: a review with emphasis on underlying mechanisms and implications for health. **Psychological Bulletin**. Vol. 119, No. 3, pp. 488-531.

Vartiainen, E., Jousilahit, P., Alfthan, G., Sundvall, J., Pietinen, P and Puska, P. (2000) Cardiovascular risk factor changes in Finland, 1972-1997. **International Journal of Epidemiology**. Vol. 29, pp. 49-56.

Vitolins, M.Z., Rand, C.S., Rapp, S.R., Ribisl, P.M and Sevick, M.A. (2000) Measuring Adherence to Behavioural and Medical Interventions. **Control Clinical Trials.** Vol. 21, pp. 188s-194s.

Wanless, D. (2002) **Securing out Future Health: Taking a Long-Term View**. HM Treasury: London

Walking & Cycling: an Action Plan (2004) **Department of Transport (DFT)** http://www.dft.gov.uk/stellent/groups/dft_susttravel/documents/downloadable/dft_susttravel_029204.pdf

Ward, A and Morgan, W.P. (1984) Adherence patterns of healthy men and women enrolled in an adult exercise program. **Journal of Cardiac Rehabilitation**. Vol. 4, pp. 143-152..

Wealdon District Council (1995)**The Oasis Programme Evaluation Report**. Halisham, East Sussex: Wealdon District Council Leisure Services.

Webb, E., Campbell, D., Schwartz, R., Sechrest, L., Grove, J (1981) **Non-reactive measures in the social sciences. 2nd Edition**. Houghton Mifflin: Boston.

Webborn, A.D.J. (1997) Exercise prescription in primary care. **British Journal of General Practice**. Vol.47, pp.526-527.

Weiner, B (1985) An attributional theory of achievement motivation and emotion. **Psychological Review**, Vol. 92, pp. 548-573.

Weiner, B (1986) **An attributional theory of motivation and emotion**. Berlin: Springer.

Weis, J (2003) Support groups for cancer patients. **Supportive Care in Cancer**. Vol. *11, No. 12, pp.* 763-768.

Wells, K.B., Ware, J.E and Lewis, C.E. (1984) Physicians' attitudes in counseling patients about smoking. **Medical Care**. Vol. 22, pp. 360-365.

Whitehead, M. (1995) Physical Activity: Health Update 5. **Health Education Authority**: London.

Wiesemann, a., Metz, J., Nuessel, E., Scheidt, R and Scheuermann, W (1997) four years of practice-based and exercise-support behavioural medicine in one community of the German CINDI area. **International Journal of Sports Medicine**. Vol. 18, No. 4, pp. 308-315.

Wigan Council (2000). **Mapping Poverty in Wigan. Report 3. Index of Multiple Deprivation 2000**. Wigan Council.

Wigan and Bolton Health Authority (2000) **A Physical Activity Strategy for the Borough of Wigan**. Wigan Council.

Wigan and Bolton Health Authority Survey (2001). Wigan Primary Care Trust.

Williams, P.T. (2001) Physical fitness and activity as separate heart disease risk factors: a meta analysis. **Medicine and Science in Sport and Exercise**. Vol. 33, No. 5, pp. 754-761.

Williams, P., Barclay, L. and Schmied, V. (2004) Defining Social Support in context: A necessary Step in Improving Research, Intervention and Practice. **Qualitative Health Research.** September. pp. 942-960.

Williford, H,N., Barfield, B.R., Lazenby, R.B. and Scharff Olson, M. (1992) A Survey of Physicians' Attitudes and Practices related to Exercise Promotion. **Preventative Medicine**. Vol. 21, pp.630-636.

Wimbush, E (1994) A Moderate Approach to promoting Physical Activity: the evidence and implications. **Health Education Journal**. Vol. 53, pp. 322-336.

Wise, D and Stake, J. E. (2002). The Moderating Roles of Personal and Social Resources on the Relationship between Dual Expectations (for Instrumentality and Expressiveness) and Well-Being. **Journal of Social Psychology**. Vol. 142, No. 1, Feb., pp. 109-119.

Woodward, M.C and Berry, M.J (2001) Enhancing Adherence to Prescribed Exercise: Structured Behavioural interventions in clinical exercise programmes. **Journal of Cardiopulmonary Rehabilitation**. Vol. 21, pp. 201-209.

World Health Organisation (1997) **Obesity: preventing and managing the Global Obesity Epidemic**. Geneva, World Health Organization (WHO Technical Report Series, No. 894).

WHO MONICA Project Principal Investigators. World Health Organisation MONICA Project (monitoring trends and determinants of cardiovascular disease): a major international collaboration (1998). **Journal of Clinical Epidemiology**. Vol.41, pp. 105-114.

World Health Organisation (2000). **Obesity-preventing and managing the global epidemic**. Report of a WHO consultation on Obesity: Geneva. World Health Organisation.

World Health Organisation (2002). **The World Health Report 2002. Reducing Risks, Promoting Healthy Lifestyle.** World Health Organisation. Geneva.

World Health Organisation (2003) **Controlling the Global Obesity Epidemic.** http://www.who.int/nut/obs.htm

World Health Organisation (2004) **Global Strategy on Diet, Physical Activity and Health. Expert Report.**

Wormlad, H. and Ingle, L (2005) GP exercise referral schemes: Improving the patient's experience. **Health Education Journal**. Vol. 63, No. 4. pp. 362-373.

Wright Foundation Conference, (2003), **4th National GP Referral Conference**, NEC, Birmingham.

Young, A., Gray, J.A., and Ennis, J.R (1983) Exercise Medicine. The knowledge and beliefs of final-year medical students in the United Kingdom. **Medical Education**. Vol. 17, p. 369-373.

Young, D.R., Gittelsohn, J. Charleston, J., Felix-Aron, K, and Appel, L.J. (2001) Motivations for Exercise and Weight Loss among African-American Women: Focus Group results and Their Contribution towards Program Development. **Ethnicity and Health**. Vol. 6, No. 3-4, Aug-Nov, pp. 227-245.